# Liquidity Risk Management in Banking Activities Research at Military Bank in Vietnam

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# ABSTRACT

Nowadays, liquidity risk management is one of the subjects which it appears regularly in science because of its vast importance and complexity, especially for financial activities – monetary activities in the banking system. It may mention that the risks are unavoidable in most business activities, specifically in banking for business activities in the context of a modern economy. In reality, international banking activities and banking activities in Vietnam country demonstrated commercial banks have to confront with countless risks in business such as credit risk, interest rate risk, liquidity risk, exchange rate risk, international payment risk, risk operating, …

Keywords: liquidity risk, risk management, liquidity risk management, banking, banking activities, banking field, banking sector

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Author

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# INTRODUCTION

Extracting from the Speech by Mr. Malcolm D Knight, General Manager of the BIS "Liquidity is the oil that greases the wheels of the financial machine". In his speech, he indicated that liquidity risk management is the key priority as well as decisive action in ensuring the tremendous impact on business operations results. Liquidity risk is a one of specific risk which is an obstacle problem occurs daily to business in banking activities. Liquidity risk emerges from unable responding on time to financial obligations accrued in banking activities such as deposit payment, lending, liquidation, and other financial trading. The reason leading to this situation is because the bank has to raise the high costs of additional capital or sell low costs of assets.

Because of liquidation is a common concern, therefore one of a key priority of banking management is ensuring financial resources to afford the payment permanently, constantly and completely.

From the above rationale, the author decides to discuss a specific topic "Liquidity risk management in banking for business activities: research at MB in Vietnam" as a master thesis.

**1. Researching Purposes:**

The researching purposes of this paper are offering the solutions to strengthen overall liquidity risk management in banking activities of MB Bank to 2020 and the vision of 2030.

To achieve the purpose of the study, the paper performs researching tasks as below:

a) Systematized liquidity risk and liquidity risk management literature review in commercial banking activities; researching national and international experiences and key lessons learned in liquidity risk management.

b) Analyze and evaluate the actual situation of liquidity risk management in MB Banking activities during the 2014 – 2017 period. On that basis, the result will become evident in limiting and its reason.

c) Study, purpose solutions and strengthen participatory liquidity risk management in banking activities of MB Bank for 2019 – 2025 period.

**2. Subjects for study and area of research:**

a) Liquidity risk and Liquidity risk management in commercial banking activities are subject studying in this paper

b) Area of research:

*The scope of content*: Liquidity risk, liquidity risk management; study national and international experiences from the commercial bank. Identify, measure, process and manage liquidity risk at MB bank. Solutions to enhance liquidity risk management for MB bank.

*The scope of spatialized*: Liquidity risk and Liquidity risk management

*The scope of time*: the data from operating activities at Mb bank during 2014 – 2017 period. Solutions to enhance liquidity risk management for MB bank from 2019 to 2025 period.

# I. THEORY

# 1 MANAGEMENT OF LIQUIDITY RISK IN BUSINESS ACTIVITIES OF COMMERCIAL BANKS

Systematizing theoretical basis about liquidity risk management in the business activities of commercial banking is the focal point in this chapter. The problems will be expressed in detail:

(1) The concept of risk, risk management, and liquidity risk management;

(2) The methods of managing the liquidity risk;

(3) Analyzing domestic and international experiences related to liquidity risk management.

## 1.1 Risk and liquidity risk

Theoretical basis about risk and liquidity risk in the business activities of commercial banking are defined.

### 1.1.1 Concept

The basic concept of business activities of commercial banks, risks, and risks of financial institutions and liquidity will be systematized in details.

#### *1.1.1.1 Business activities of commercial banks*

Throughout the history of mankind, the formation of the bank is seen as one of the important civilization's signs of progress. Today, in the context of the market economy and international integration, the activity of the banking system is like "*the backbone, the lifeblood of the national economy*". It is no coincidence that the position of the banking system is highly appreciated. In particular, specific business activities of commercial banks (CBs) are trading on the currency field. Law on Credit Institutions Vietnam[1] stipulates: *the bank is a type of credit institutions are allowed to perform all banking activities and other activities related*. In this concept, banking activities are explained in the Law on the State Bank[2]: *the*

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[1] Article 4, Law on Credit Institutions No. 47/2010/QH12

[2] Article 6, Law on the State Bank No. 46/2010/QH12

*business of currency and banking services with regular content that is to receive deposits and use this money to grant credit limits, providing payment services.*

The banking business is a complex type of activity, affected by many factors both inside and outside the country, even today, with the strong development of science and technology, the Internet of Things, etc. the bank's business activities become more and more diversified. Therefore, banking activities always contain many risks and risk management is one of the important activities in banking operations.

#### *1.1.1.2 Risks and risks of financial institutions*

These days risks are placed in almost all areas of science, but there is no unified concept of risk[3]. From a traditional approach perspective, the risk is understood as damage, loss, danger or factors related to danger, difficulty, or uncertainty that can happen to people. However, in the development context of mankind, the risk has been interpreted as contingencies that can be measured and controlled (Frank Knight, 1964[4]; Allan Willett, 1951[5]; David Apgar, 2006[6]; etc.). On that basis, today the view of neutralization school is considered the most appropriate because risk management is good to identify risks and measure risks. Risk management helps find preventive measures, avoid those pure risk, limit the damage caused by risk, and helps achieve the best results in the future.

In terms of risks of financial institutions, if broken down by Vietnamese tradition, they may include major types of risks such as interest rate risk, market risk (price risk), credit

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[3] Doan Thi Hong Van, Kim Ngoc Đat, Ha Duc Son (2013): *Risk and Crisis Management*. The Labour and Social Publisher, pp 30.

[4] Frank H. Knight (1964): *Risk, Uncertainty and Profit.* New York. URL: https://mises.org/sites/default/files/Risk,%20Uncertainty,%20and%20Profit_4.pdf

[5] Allan H. Willett (1951): *The economic theory of risk and insurance*. University of Pennsylvania Press, Philadelphia. URL: https://www.casact.org/pubs/forum/91wforum/91wf469.pdf

[6] David Apgar (2008): *Risk intelligence: Learning to manage what we don't know.* The journal of Risk and Insurance (5 November 2008).

risk, off-balance sheet risk, foreign exchange risk, technology risks, operational risk, and liquidity risk. According to the Basel Banking Supervision Committee[7], the risks that institutions may face are divided into 3 main groups: interest rate risk, foreign exchange risk, and market risk. Thus, liquidity risk is one of the risks of banking activities.

#### *1.1.1.3 Liquidity*

There are many different approaches and understandings about liquidity. For a bank, liquidity is considered in three aspects: liquidity of assets, the liquidity of the source and liquidity of the bank. In particular, the liquidity of the bank is created with the liquidity of assets and liquidity of the source.

a) From an asset perspective. Liquidity is the ability to convert into money of assets and vice versa, measured by time and cost. The cost here is understood as the loss (devaluation) of the asset. For example, the value of the asset is 10 units, but when being sold, only 9 units are collected, 1 unit of loss is considered to be the cost of transferring assets into money. An asset is considered liquidity when it meets the criteria, such as available quantity to buy or sell; available trading market; available trading time; good price[8].

An asset is considered as high liquidity if the transfer of that asset into money takes a short time and low cost. Conversely, if an asset takes a long time or high cost to convert into money, it is considered to be low liquidity. The Bank holds assets with different liquidity. The structure of assets with different liquidity creates the liquidity of the asset group or of the asset portfolio.

b) From the perspective of capital. Liquidity is understood as the ability to mobilize, expand the capital of the bank, measured by time and cost of source expansion when needed.

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[7] Basel is a banking supervision committee set up by G10's central bank governor in 1974. Since its establishment, the Basel Committee has published many versions and sets of regulations applied for banking operations. Today, the application of Basel is voluntarily studied by many countries not belonged to Basel Committee, including Vietnam.

[8] Nguyen Van Tien & Nguyen Manh Hung (2017): *Handbook of risk management in business activities of banking*. The Labour Publisher, pp. 940.

The lower the time and cost, the higher the liquidity of the capital and vice versa. For example, a bank has the ability to mobilize capital with a reasonable time and interest rate, so its liquidity is high.

c) From a bank perspective. Liquidity is the ability of a bank to respond promptly and fully to financial obligations arising in the course of business operations. For commercial banks, liquidity is the ability to meet the demands for deposits, loans, payments, and other financial transactions.

Thus, a bank is considered to be good liquidity, if it is able to fully meet the new payment demands arising at a reasonable cost at the time the customer or partner needs. The liquidity of a bank is created by the liquidity of the assets that the bank holds and the liquidity of the source, i.e from existing assets (reserves) and new mobilized capital. A bank is highly liquid when it has many liquid assets or is able to expand its capital quickly with low cost, or both.

When it comes to liquidity problems, the bank is not only concerned with balancing the need to withdraw money with the existing money, but also balancing the ability to mobilize the next capital. Therefore, the liquidity of CBs must always be viewed in a dynamic state, that is to consider the correlation between the supply and demand of the bank in a certain period. Factors affecting liquidity supply and demand will affect the liquidity status of commercial banks. The liquidity supply (cash inflow) is the amount available or can be mobilized in a short time for banks to use. This inflow is made up of many sources.

**Table 1.1: Supply of liquidity**

(*Source: Author's summary*)

| **Available assets** | **New mobilization** |
| --- | --- |
| 1. Cash in fund and deposits at State-owned banks and other credit institutions.<br>2. Credits to be repaid.<br>3. Selling assets in business and use<br>4. Government securities and highly liquid securities.<br>5. Other liquid properties. | 1. New deposits of customers.<br>2. Central Bank loans.<br>3. Income from the provision of services<br>4. Loans on the interbank market.<br>5. Other forms of liabilities. |

Liquidity demand (cash outflow) reflects the need to withdraw money from banks at different times. If ranked in the order of payment priority, liquidity demand sources are often classified as follows:

a) Required reserve[9]: according to the provisions of the reserve requirements set by monetary authorities, is the first liquidity demand that commercial banks must meet. The required reserve ratio is a central bank's regulation on the percentage of cash and deposits that commercial banks are required to comply with to ensure liquidity. Banks can hold cash higher or equal to the required reserve ratio but not less than this ratio. If there is a shortage of cash, commercial banks must borrow more to ensure the required reserve ratio.

b) Customers' withdrawing is the demand for regular, instant and unconditional liquidity, including types of call deposits, payment deposits, fixed deposits. Under normal conditions, public deposits are a relatively stable source of capital as banks can rely on developments in the withdrawal of deposits to estimate the number of deposits to be withdrawn. But in the case of unusual movements in banking operations, the demand for withdrawal of deposits will become extremely sensitive because the factor determining this liquidity demand is the psychology of depositors.

c) Payment of valuable papers and repayment of loans when due: when a commercial bank issues valuable papers such as deposit certificates, negotiable notes, treasury bills, bank bonds or borrows from Central Bank and credit institutions, such the bank must have preparation plans to meet liquidity demand when valuable papers and loans are due. In addition, when the forward and futures contracts on international exchanges are due, banks must also be ready to respond.

d) Costs for the process of creating bank products and services, paying dividends to shareholders, paying other financial obligations: liquidity demand also arises when payment of operating costs is required, such as salaries and allowance regimes, asset purchases, other organizations' service costs, tax and dividends for stocks issued by the bank and payment of other financial obligations.

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[9] Wikipedia. Reserve requirement (2019). URL: https://en.wikipedia.org/wiki/Reserve_requirement (April 10th, 2019)

e) Credit demand of customers: lending is the basic activity of commercial banks because it brings high profits and entails other services to develop, including the need for new credit and the use of credit limit of the customer.

### 1.1.2 Liquidity position

In the banking business, at any time, the liquidity supplies and demands come at the same time and form a net liquidity position (NLP) and are calculated as follows[10]:

$NLP = \sum Liquidity\ Supply - \sum Liquidity\ Demand$ [1]

There are three possibilities:

*a) Liquidity surplus (NPL > 0)*

It happens when liquidity supply exceeds liquidity demand, i.e redundancy of interest-free cash, which is an imbalance of commercial banks, occurs when they are inefficient, inaccessible to customers or not selecting many customers to lend. The bank must determine where to invest this surplus capital to be effective.

Excess liquidity is often used by banks to: Buy secondary reserve securities previously sold; Loans in the money market; Send money at other credit institutions.

*b) Liquidity deficit (NPL < 0)*

It happens when liquidity demand is greater than liquidity supply, i.e there is not enough capital to meet the demand for payment to customers, the demand for loans of businesses and the economy. This leads to easy loss of good investment opportunities that can bring profits to banks, even the possibility of losing customers when they have to go to other banks to meet their loans promptly. Losing borrowers will lead to loss of deposit customers, as when the bank lacks funds, it will reduce the trust of depositors, and the ability of banks to raise capital is poor.

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[10] Nguyen Van Tien & Nguyen Manh Hung (2017): *Handbook of risk management in business activities of banking*. The Labour Publisher, pp. 940.

The bank must determine where to add liquidity, where and how much it will cost to meet the lowest and most timely capital needs. The Bank may use the following measures to deal with liquidity shortages: Use of residual required reserves (if any); Sale of secondary reserves; Overnight loan, rediscount at the State Bank; Mobilization from the monetary market: issuing certificates of deposit with large denominations to raise capital.

*c) Liquidity balance (NPL = 0)*

It occurs when the liquidity supply is balanced with liquidity demand. This is a very unlikely situation in reality.

### 1.1.3 Liquidity risk and causes

Liquidity risk occurs when actual liquidity demand exceeds the bank's expected solvency. In other words, liquidity risk is the ability of banks not to meet financial obligations immediately or to raise additional capital at a high cost or to sell assets at low prices.

The liquidity risk situation describes the imbalance of the bank:

a) When the bank has surplus liquidity: low liquidity risk occurs when the economy is inefficient, lack of business or investment opportunities, commercial banks lack methods and ability to reach customers, markets, not exploit all profitable assets, capital growth is too fast compared to the scale of operation and management capacity.

b) When the bank has a liquidity deficit: High liquidity risk occurs when banks do not have enough capital, causing activities to stagnate, causing losses, losing credibility, even leading to bankruptcy.

It can be affirmed that liquidity risk causes losses to banks, and adversely affects the reputation, income and final solvency of commercial banks. Liquidity risk is the most serious type of risks in the banking business because, in addition to the specific causes, liquidity risk can also be derived from and turn bad under the impact of other non-financial and financial risks in the operations of the bank.

#### *1.1.3.1 Premise cause*

There are three main reasons why banks have to face frequent liquidity risk:

a) Banks mobilize and borrow loans with short term, and keep them circulating to use loans with longer term. Therefore, many banks have to face the mismatch of deadlines between assets and liabilities. It is rare for the asset's net cash flow to fit closely to cover the net cash flow of liabilities. The fact is that banks often have a significant proportion of liabilities characterized by having to be repaid immediately if the fixed deposits can be withdrawn before maturity. Therefore, the banks must always be ready to liquidate.

b) The sensitivity of financial assets to changes in interest rates. When interest rate rises, many depositors will withdraw money to find out where other deposits have higher interest rates. Those who need credit will refund, or withdraw the credit limit balance with the agreed low-interest rate. In addition, changing interest rates will affect the market price of assets sold by banks to increase liquidity, and directly affect the borrowing costs in the bank's money market.

c) The bank must always meet the liquidity demand perfectly. Liquidity problems will undermine people's confidence in the bank. Let us imagine what will happen to the bank if it is in the morning, the payment counters or the bank's automatic payment machines are closed for the reason that the cash is temporarily unavailable, it cannot pay incoming checks as well as due deposits? One of the important tasks for bank managers is to keep in close contact with customers with large cash balances and customers who have large unused credit lines to know their plans, when and how much they withdraw to have a reasonable liquidity plan.

#### *1.1.3.2 Causes from operation*

Liquidity risk may arise from banks' operations of liabilities[11] or assets[12]:

[11] Liabilities are the result of raising capital from banks from economic organizations and all strata of society.

[12] Assets are the result of the use of the bank's capital, and formed from the bank's capital during the operation.

a) For liabilities, liquidity risk may arise whenever depositors make withdrawals immediately. When depositors withdraw money suddenly, forcing the bank to borrow additional money or sell assets (convert assets into cash) to meet liquidity capacity. Of all liabilities' groups, cash has the highest level of liquidity, therefore, banks use cash as the first and direct way to meet liquidity needs. But unfortunately, cash does not bring interest income, so banks tend to reduce assets in cash. To obtain interest rates, banks must invest money in assets with little liquidity or on long-term assets. Although in the end most of the different assets can be converted into money, the cost to convert instantly into money of different assets is very different.

When it comes to selling an asset immediately, its price can be much lower than if it is time to seek buyers and negotiate prices. As a result, some assets can only be converted into money immediately at a very low price (fire-sale prices), thus threatening the bank's final solvency. In addition to liquidating assets, the bank can seek additional funds through borrowing in the money market.

b) For assets, liquidity risk arises related to credit commitments. A credit commitment allows borrowers to conduct a loan withdrawal at any time during its term. When a credit commitment is made by the borrower, the bank must ensure there is enough money immediately to meet the needs of the customer, otherwise, the bank faces liquidity risk. Similar to liabilities, in order to meet assets' liquidity needs, banks can reduce cash balances, convert other assets into money, or borrow additional funds in the money market.

## 1.2 Liquidity risk management

The concept of liquidity risk management and five main factors will be further described in details.

### 1.2.1 Concept

The nature of business activities of commercial banks is to use prestige to attract capital and use the capacity to use capital and develop other services effectively. Therefore, the bank' business activities include many risks. Banks need to assess business opportunities based on the risk-benefit relationship in order to find opportunities to achieve the benefits that are worth the acceptable risk. The bank will function well if the risk that the bank incurs is reasonable and manageable[13].

Risk management in banking business is a systematic approach with the goal of identifying, measuring, controlling, preventing and minimizing losses and damages due to adverse effects of risks. In other words, this is the process of reviewing the entire bank's operations to identify potential risks as well as the possibility of potential risks, which can help the bank prepare options suitable to minimize risks.

Liquidity risk management is that the bank uses the system of management mechanisms, professional solutions and appropriate technology tools to maintain the regular balance of supply and demand of liquidity, timely handle liquidity risk situations but still ensure profitability for banks and ensure the following objectives[14]:

a) Comply with the State Bank’s regulations and law;

b) Timely meet the payment obligations of the entire system with reasonable costs, ensuring safety in operations;

c) Reduce liquidity risk through the process of identifying, estimating, monitoring and controlling risks according to international standards;

d) Improve the efficiency of using capital in business activities.

### 1.2.2 Influecnce factors

The management of bank liquidity is a very complex task and is influenced by many different factors. Some key factors can be listed.

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[13] Nguyen Dang Don (2010): *The modern commercial banking management*. The Phuong Dong Publisher, pp. 105.

[14] Nguyen Van Tien (2010): *The banking business risk management*. The Statistics Publisher, pp. 98.

#### *1.2.2.1 Arising the liquidity demand*

This is one of the leading factors affecting the risk management activities of commercial banks. With a certain demand for liquidity at some point, commercial banks will have to choose between the available liquidity capabilities to make timely, correct and effective decisions. For example, the time to pay salaries and bonuses of businesses, consumption during the Lunar New Year, etc. are the factors that tend to repeat over the extent, time and duration, so on, then the bank must be based on experience and can rely on this forecast. In this case, commercial banks will use mobilized capital sources to satisfy seasonal demand for liquidity.

However, in addition to the seasonal reasons that banks can predict by experience, there are many causes of other liquidity needs that risk management firms must also consider. For example, when interest rate and/or inflation rises, the demand for banks' liquidity will increase, so commercial banks need to take measures to meet the liquidity demand suddenly increased in that period. In this case, commercial banks will have to borrow capital from the interbank market, sell off high-liquidity valuable papers to meet liquidity needs.

#### *1.2.2.2 Term of liquidity reqquirements of commercial banks*

It is the time when banks face a lack of liquidity. The term of liquidity requirements is also an important factor affecting liquidity decisions.

When the short-term liquidity deficit, banks will tend to use loans in the money market or sell their liquid assets rather than mobilize to compensate. In contrast, when the long-term liquidity deficit, banks tend to increase mobilized capital rather than hot loans.

When the short-term liquidity surplus, banks will tend to invest in liquid assets or lend to other financial institutions. In contrast, when the long-term liquidity surplus, the banks plan to use it to disburse loans to the economy or invest in long-term assets such as long-term valuable papers, real estate investment, etc.

#### *1.2.2.3 Commercial banks' ability to participate in monetary markets*

This is a factor determining the liquidity supply of commercial banks because it is a channel to create liquidity relatively quickly with reasonable costs, particularly, the source of loans from the credit limit granted by the State Bank in accordance with standards and conditions approaching international practice. However, banks' ability to participate in these markets is completely different, as follows:

a) Small-scale commercial banks: are limited in their ability to borrow from these sources and must rely on the sale or securitization of its assets. The limit of borrowing from financial institutions and the Central Bank will be reserved for cases of unexpected liquidity needs.

b) Large-scale commercial banks have the opposite condition. If managed appropriately, these commercial banks are often able to access various sources of capital in the domestic and international financial markets such as transferable and large deposit certificates, commercial papers, acceptance of banks, bonds, treasury bills, etc. Therefore, large-scale commercial banks tend to choose these sources of mobilized liquidity to meet liquidity demands more than small scale commercial banks.

c) Medium-sized commercial banks: mobilized capital sources include not only the Central Bank's borrowed capital but also other forms such as large deposit certificates and debts that are procured. These medium-sized commercial banks often lack the ability to access the domestic monetary market and most other international markets. In addition, these CBs also have relatively limited loans compared to other large-scale CBs. In order to meet liquidity needs, these CBs mainly use seasonal loans or sell liquid assets.

#### *1.2.2.4 Business strategy of commercial banks*

A commercial bank's business strategy is also an important factor affecting the bank's liquidity management. From business strategy, commercial banks will concretize into regulations on liquidity management as well as other related activities. Business strategy will show how many commercial banks will accept to depend on unstable capital sources and may be strongly reduced in difficult economic periods:

a) Cautious business strategy: not or just using very little capital to buy to meet liquidity needs (i.e completely based on their flexible assets). However, this strategy is not easy. In the past, in Vietnam, there are only a few State-Owned Commercial Banks (SOCBs) and JSBs that can meet the demand for liquidity. The rest, due to the pressure of growth in asset's scale, the pressure of profit before shareholders, did not have flexible assets.

b) Bold business strategy: always looking for ways to increase mobilized capital of all different types of capital sources, as long as the total cost of capital is still lower than the net profit that the bank may obtain when investing them. Even when the situation is too difficult, they temporarily accept losses to wait for profits at a later stage. Such commercial banks generally depend a lot on external capital. This represents a bold strategy, sometimes it is a risk, even a lack of experience in risk management. At the same time, the manager of this strategy must also be aware that the prestige of the bank is the most important factor determining the ability of the bank to access capital sources in the money market.

#### *1.2.2.5 Costs of liquidity sources*

Normally, commercial banks will select a certain source of capital with the lowest cost and still fully meet the liquidity needs. The principle of this minimum cost depends on the conditions for accessing the money market as well as the management philosophy and business strategy of the bank itself. Where the bank intends to sell an asset to address liquidity needs, the cost here is the remaining source of income from the property that the bank has accepted to give up when deciding to sell them after it has been added, subtracted all interest losses, taxes and brokerage fees. When the bank wants to use mobilized capital, the cost will not only include interest payment fees but also costs for required reserves, handling costs, insurance, and other related expenses.

Liquidity risk management has international practices but must be applied appropriately to the characteristics of Vietnam's economy, when macroeconomic developments are not stable. The size and quality of activities among commercial banks in our country are still quite far from each other. The risks of policy and market risks are still very large, affecting the risk management of commercial banks. This is a big and complicated issue in the operation of a commercial bank.

### 1.2.3 The role of liquidity risk management

According to CAMELS[15] Formula (a method or a tool used to analyze the performance and risk of a bank), there are six basic factors that influence the performance of a bank. Commercial banks, namely: Capital (C); Asset Quality (A); Management Ability (M); Earning (E); Liquidity (L); and Market sensitivity (S).

In the above 6 factors, the liquidity is considered as the most sensitive factor, potentially affecting very quickly the operation of commercial banks. Therefore, liquidity risk management plays an important role in the basic operations of the bank for the following reasons:

***Firstly***, there is a trade-off between Liquidity and Earning. The more the bank is focused on capital to be ready to meet the liquidity demand, the lower the Earning of the bank and vice versa, if the bank wants to make more profits, it must bear many risks on liquidity. In fact, commercial banks tend not to maintain the necessary capital because this asset is not profitable. In addition, with the growing monetary market, many commercial banks believe that it is not too difficult to borrow a large amount of capital at any time when there is a need. So there is no need of too many storages of liquidity in the form of easy-to-sell assets. However, the fact has shown that the demand for liquidity is an issue that cannot be overlooked, some commercial banks have faced serious cash shortages. Good liquidity means that the bank can accurately calculate and predict the capital inflow and outflow of the bank at any time, meaning that the bank can fully take the initiative in using capital and maximize the efficiency of capital use. Meanwhile, income will increase, creating opportunities for commercial banks to expand operations both in width and depth.

***Secondly***, liquidity risk has a great impact on the reputation of the bank. When the bank reveals that it is having difficulty in liquidity issues, customers' confidence in the bank will be severely reduced. It is inevitable that customers will not want to take risks and quickly

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[15] Wikipedia. CAMELS rating system (2018). URL: https://en.wikipedia.org/wiki/CAMELS_rating_system (November 15th, 2018)

withdraw all the deposits at the bank to transfer to another bank or another form of investment. The decline of customer confidence is the shortest way to bring commercial banks to the liquidity crisis, then bankruptcy.

***Thirdly***, liquidity risk is systematic. Commercial banks are considered the lifeblood of the economy. If the commercial banking system operates stably, the whole economy will operate stably. Of course, the development of the economy depends on many factors, but the commercial banking system is the most influential field, affecting all aspects of socio-economic activities. Banking activities are highly systematic, so when liquidity risk occurs at a certain bank, it is very easy to lead to a liquidity crisis for the whole banking system. It is this great influence that requires the commercial banking system to operate stably and effectively and control risks, in which liquidity risk control is considered a decisive issue.

## 1.3 Liquidity risk management method

The risk and liquidity risk should be identified for measuring liquidity risk. After measuring, the liquidity risk should be controlled for prevention.

### 1.3.1 Risk identification

Risk identification is the most important condition and the first step for risk management. It is a process of continuous and systematic identification of the bank's business activities, including: monitoring, considering and studying the operating environment and the whole operation of the bank in order to list all types of risks, including forecasting new types of risks that may occur in the future, from which there are some measures to control and fund for each appropriate risk.

In fact, no bank exists in the state of liquidity balance and does not fall into liquidity risk. The liquidity of the bank is reflected in the following six signs[16]:

***First***, people's confidence: this is one of the important signs to assess the liquidity of a bank í good or bad. If the bank's liquidity management is not good, the bank will gradually

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[16] Nguyen Van Tien (2010): *The banking business risk management*. The Statistics Publisher, pp. 69.

lose depositors because they are worried that the bank will be short of cash or unable to pay for the immediate needs of customers. On the contrary, if the customer has placed confidence in the ability to repay both the principal and interest of the bank, it means that the bank is recognized as having high liquidity.

***Second***, the fluctuation of the bank's stock price: When the bank’s stock price tends to decrease, it proves that their attractiveness to investors has decreased, affecting the psychology of the depositors. People tend to withdraw money from banks to send it to other banks or invest in more profitable channels, while loans that are due are not paid or cannot meet the demand for liquidity, leading to greater liquidity demand. This causes banks to fall into liquidity risk. On the contrary, the stock price increases or remains unchanged, the confidence and psychology will be strengthened into the bank’s solvency.

***Third***, apply a higher interest rate than the market: When a bank accepts mobilization interest rates (deposits, bills, bonds) and accepts loan interest rates abnormally higher than market interest rates or borrows with tight conditions on security assets, proving that the bank is facing a liquidity crisis.

***Fourth***, suffer losses when selling assets: Selling assets means that the bank must accept the loss of income generated from future assets as well as transaction costs paid to the broker related to the sale of the property. When a bank sells its assets in a hurry and is willing to suffer big losses or asset transformation takes place regularly, it proves that the bank is having liquidity problems.

***Fifth***, the ability to meet customers’ demand for loans: Lending is one of the most important activities of commercial banks because this activity creates the most profit and leads to other business development. When a bank fails to fully and timely meet its credit commitments, the demand for loans from customers with high credit rating is not resolved or some feasible loan requests are rejected, then it proves that the bank is lacking liquidity supply.

***Sixth***, often borrow from the central bank: The central bank plays the role of the last lender to commercial banks. When a bank has to borrow from the Central Bank on a large and frequent amount, the bank is experiencing a significant liquidity problem.

Thus, if any of the above market signs appear, the bank needs to review its liquidity management policy to regain market confidence.

### 1.3.2 Measuring liquidity risk

There are many methods of liquidity risk measurement that have been developed and each method is built based on some assumptions that banks can only approximate the actual liquidity demand at a certain time. That is why liquidity managers must always be willing to adjust their estimates of liquidity requirements every time when the bank receives new information. In general, to measure liquidity risk, commercial banks often use the following basic methods[17].

#### *1.3.2.1 Approach to liquidity supply and use of liquidity*

This method is based on the fact that liquidity of the bank increase when deposits and loans decrease. On the contrary, it decreases when deposits decrease and loans increase. In order to meet the liquidity needs, the bank must liquidate (convert) a part of assets into money or take out additional loans in the money market.

To manage liquidity effectively, bank managers need to quantify the position of daily liquidity. A useful tool is to prepare a net liquidity report, which lists all cash flows reflecting the source of liquidity and the amount the bank has actually used to meet liquidity needs, thereby to calculate the position of net liquidity. The net liquidity position at a time is the difference between the cash flow making up the liquidity source and the amount the bank has used to meet liquidity needs.

The main steps in this method include:

*Step 1:* Estimate the demand for loans and the amount of deposits in the planning period (the bank's estimating the period of liquidity position).

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[17] Nguyen Van Tien (2010): *The banking business risk management*. The Statistics Publisher, pp. 101.

*Step 2:* Calculate the expected changes in loans and deposits during the planning period.

*Step 3:* Estimate the bank's net liquidity position by comparing the expected change in loans and that in deposits.

The bank has three basic sources of liquidity:

a) Assets are considered as cash: including bonds, treasury bills that can be converted into cash immediately with low price and transaction costs.

b) Maximum borrowing capacity is the amount that banks can borrow the maximum in the money market or repurchase contracts.

c) Excess reserves are any amount in the bank's fund and on the central bank account exceeding the required reserves as stipulated.

#### *1.3.2.2 Method of liquidity supply and demand*

The liquidity of banks can be analyzed in the context of supply and demand by determining the payment needs and sources of income of the bank at a certain time. The concepts of liquidity supply, liquidity demand and liquidity position have been mentioned above.

Here, it is important to emphasize that the liquidity time is very important, because:

a) Demand for liquidity may arise immediately (or in the short term), for example, a large amount of bonds issued by the bank until the maturity date, some large customers announced the withdrawal of deposits, not prolonging their period or circulation, etc. In order to meet the immediate demand for liquidity, managers have can increase liquidity supply by taking additional loans in the money market.

b) Demand for liquidity in the long term (demand is seasonal, cyclical or trend). For example, a tendency to withdraw more money before the Lunar New Year, in the tourist season, ... To meet the demand of liquidity in the long term, in addition to the regular liquidity sources such as new deposits and recovery of due credits, banks can increase the stock of liquid assets such as bonds, treasury bills or sign long-term credit limits with other banks.

In the context of supply and demand, the liquidity management of the bank can be generalized as follows:

a) Liquidity demand-supply balance doesn't almost exist, banks often have to deal with liquidity deficit or liquidity surplus.

b) Banks must trade-off between liquidity and earning. In the event that other factors remain constant, the more banks liquidate high liquid assets to meet the demands, the lower the bank's earning.

#### *1.3.2.3 Financial index method*

A traditional liquidity management method through the analysis of indicators drawn from the asset balance sheet between banks of equal size and in the same area:

$$\textit{Capital adequacy ratio (CAR)} = \frac{\textit{Self-equity}}{\textit{Adjusted risk assets}} \qquad [2]$$

The minimum capital adequacy ratio represents the amount of equity to support the bank's business operations. The capital adequacy ratio is calculated as the percentage of total equity over the bank's adjusted risk assets.

How to calculate the equity and risk-adjusted assets is guided in detail in Circular No. 36/2014/TT-NHNN[18]. Also, according to this Circular, each credit institution must maintain a separate minimum capital adequacy ratio of 9%. Credit institutions with subsidiaries, in addition to maintaining the individual CAR as stipulated in point b of this clause, must simultaneously maintain the CAR of 9%.

[18] Circular No. 36/2014/TT-NHNN dated November 20th 2014, of the State Bank of Vietnam (SBV)

On December 30$^{th}$ 2016, the SBV continued to issue Circular No. 41/2016/TT-NHNN regulating the CAR for foreign banks and branches, which has been applied since 01$^{st}$ January 2020.

The capital adequacy ratio (CAR) that is stipulated in Circular 41/2016/TT-NHNN is 8%, 1 percentage point lower than the CAR of 9% stipulated in Circular No. 36/2014/TT-NHNN is currently applied earlier. The move to reduce the CAR from 9% to 8% of the SBV is to pave the way for the application of Basel II standards to the banking system as stipulated by the Basel II standard, the CAR is 8%.

This ratio is used to protect depositors against bank risks and to increase the stability and effectiveness of the global financial system. By this ratio, it is possible to determine the bank's ability to pay its term debt and face other types of risks such as credit risk or operational risk. Or when the bank guarantees this ratio, it has created a buffer against financial shocks, protecting both itself and its depositors.

$$\textit{Capital mobilization limit index} \quad = \quad \frac{\textit{Self-equity}}{\textit{Total mobilized capital source}}$$

[3]

In which:

a) Self-equity: including the real value of charter capital, reserve funds and some other liabilities such as revaluation difference, undistributed earnings, etc. (according to Article 20, Law on Credit Institutions).

b) Total mobilized capital including fixed deposit, call deposit, savings, issuing bank bills, deposit certificates to mobilize capital, amount kept and waited for payment, the deposit of the State Treasury (if any).

According to the State Bank's regulations, the total mobilized capital of commercial banks must be ≤ 20 times of its self-equity. That means the deposit limit index must be ≥ 5%. This index aims to limit the level of capital mobilization of banks to avoid the situation that banks raise more capital than the protection level of equity so that banks can lose their ability to pay.

$$\textit{Equity index on total assets} = \frac{\textit{Self-equity}}{\textit{Total assets}}$$

[4]

In addition to capital scale, MB also uses its equity index on total assets to measure capital adequacy. This index has the advantage of being easy to calculate and in accordance with the minimum capital requirements in countries with a relatively simple monetary system. As banking technology develops, this index reveals the weakness that does not take into account the off-balance-sheet risks, while the banks develop, off-balance-sheet transactions are more and more and its risk impacts are equal with the risk of balance-sheet assets. At the same time, the risk of asset types is not entirely the same. Therefore, it is necessary to build a risk factor for each type of asset.

This index is used to assess the risk of a bank's total assets. To ensure safety, the bank needs to maintain this index so that its assets are allowed to decline to a certain extent compared to the bank's equity.

$$\textit{Cash status index} = \frac{\textit{Cash + Deposits at Credit Institutions}}{\textit{Total assets}}$$

[5]

Cash is the most liquid asset in the assets, thus the more cash is held, the lower the liquidity risk. However, in business operations, holding a lot of cash is definitely not profitable.

The greater this index, the more likely the bank will be able to pay immediately to handle immediate cash needs. However, if this indicator is in fact too high, it will cause the bank's profit to fall because cash or cash equivalents often bring less profit to the bank.

$$\textit{Security liquity index} = \frac{\textit{Government securities}}{\textit{Total assets}}$$

[6]

Government securities (including treasury bonds and treasury bills - Add to two items: Investment securities available for sale and Investment securities held to maturity date) is considered to be the most liquid assets. The holding of a high volume of government securities shows the ability to meet the high liquidity requirements of the Bank.

The security liquidity index reflects the proportion of holding securities that can be easily converted into cash compared to the total bank assets. The greater this index, the lower the liquidity risk that banks face.

$$\textit{Loan ability ratio} = \frac{\textit{Credit outstanding balance} + \textit{Financial leasing}}{\textit{Total assets}}$$

[7]

Because credit outstanding and financial leasing is considered the least liquid assets, so if the more the loan ability index is, the less liquidity the bank is. However, it brings a high profit to the bank.

$$\textit{Loan on fixed deposit} = \frac{\textit{Loans}}{\textit{Deposits}}$$

[8]

Using the relationship between loans and deposits as a measure of liquidity, this index reflects how much the bank has used customers' deposits to provide credit.

The use of the relationship between loan and deposit as a measure of liquidity is based on the premise that credit is the least flexible asset among the bank's profitable assets. Therefore, the lower the index, the higher the liquidity of the bank and vice versa, the higher this index shows that the bank has fewer resources to finance growth and protect itself from the risk of sudden withdrawal.

When this index increases relatively high, banks need to tighten credit, making interest rates tend to rise.

$$\textit{Structured deposit index} = \frac{\textit{Cash + call deposit at credit institutions}}{\textit{Customer's deposit}}$$

[9]

This index reflects the amount of cash and call deposits at credit institutions in comparison with the amount of customers' deposits. This ratio measures the stability of deposits that banks own. When it reduces, the liquidity declines.

$$\textit{Net position index for credit institutions} = \frac{\textit{Deposits and loans to credit institutions}}{\textit{Deposits and borrowings from credit institutions}}$$

[10]

Index of net position for credit institutions shows the net position of banks in the market 2[19]. Analysis of the net position of commercial banks in the market 2 will show us more clearly the liquidity management ability of banks. In addition, the balance in this market also includes transactions from borrowing and lending to each other to compensate for liquidity. Therefore, analyzing this index also partly shows how the ability to manage liquidity risk of commercial banks.

The net position is calculated by Deposits and loans to credit institutions on Deposits and borrowings from credit institutions:

(1) If this index is greater than 1: it shows that the Bank lends more on market 2;

(2) If this index is less than 1: it denotes that the Bank is borrowing more in the market 2.

This index is higher, indicating the bank's liquidity as much as possible. When this index increased, liquidity increased.

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[19] Market 1 is the market that deals with economic organizations and individuals, issuing valuable papers. Market 2 is a trading market with the SBV and other credit institutions, most of which are deposit transactions at the SBV for the purpose of issuing required reserves and deposit payments and deposit transactions at other credit institutions to serving mutual capital payment goals.

#### *1.3.2.4 Some other measurement methods*

a) Capital structure method: This method only determines liquidity demand based on the allocation of capital according to its possibility of being withdrawn from the bank. This method consists of four steps:

*Step 1*: Divide the bank's total capital into multiple groups based on the possibility of capital withdrawal from the bank.

*Step 2*: Determine the demand for liquidity reserves for each capital source.

Capital liquidity reserve = 0.95 (hot capital source – required reserves)

+ 0.30 (less stable capital source - required reserves)

+ 0.15 (stable capital source - required reserves)

*Step 3*: Determine liquidity needs meet quality loans.

*Step 4*: Determine the total liquidity needs.

Loan liquidity reserve = Maximum loan size - Total current debt balance

Total liquidity reserve = Capital liquidity reserve + Loan

liquidity reserve Total liquidity reserve = 0.95 (hot capital - required reserves)

+ 0.30 (less stable capital source - required reserves)

+ 0.15 (stable capital source - required reserves)

+ 1.00 (maximum loan size – Total current debt balance)

b) Funding gap method: In fact, call deposits can be withdrawn immediately, but depositors often do not. Therefore, many call deposits are often kept at banks for a long time. In liquidity management, banks often pay attention to the average deposit balance (including call deposits) as a regular source to finance the average credit balance over most of the time.

*Funding gap = Average credit outstanding balance - Average deposit balance*

If the funding gap is positive, the bank must finance the additional credit by reducing the balance of cash reserves and liquidity assets, or take additional loans in the money market. Therefore, it can be written:

*Funding gap = - Assets with liquidity + Additional loan*

If the bank has a large funding gap (average credit outstanding balance is much higher than the average deposit balance) but still wants to maintain a lot of liquidity assets, the demand for additional loans in the money market will be larger, this potential huge liquidity risk.

c) Due scale method: This method relies on comparing cash flows in and out every day or in a certain period to determine the position of net liquidity (funding needs) every day or cumulative net liquidity position for a period. In order to perform this method of measurement, the bank needs to arrange cash flows in order on the maturity time of the assets and cash flows in the order of maturity of the liabilities. From there, it is possible to calculate the difference in cash inflows and cash outflows of banks in each period, which reflects the bank's liquidity needs at that time. The terms used maybe 1 day, 1 month, 3 months, 6 months, 12 months, etc.

### 1.3.3 Control and prevention of liquidity risk

The key content of a risk management process is to control and prevent risks. It is the use of measures, strategies, and operational programs to prevent or minimize losses and unwanted effects that may occur to the bank. Normally, to prevent liquidity risk, commercial banks will reserve a reasonable amount of liquidity to ensure the liquidity of commercial banks. Over the years, bank managers have developed a number of methods to solve the bank's liquidity problem: Asset management method, Liability management method and coordinated management method.

#### *1.3.3.1 Liability management method*

It is that the bank meets the liquidity demand arising by accessing to the money market to increase capital immediately. Currently, liability management techniques develop rapidly and much due to the following advantages:

***First***, banks can choose to borrow when they really need capital, without having to reserve some high liquidity assets at any time reducing the potential income.

***Second***, liability management method does not change the scale of asset balance and asset structure but changes the structure of liabilities. In other words, every adjustment of the bank to meet liquidity needs only takes place in liabilities. This suggests that, if the bank manages the liabilities effectively, the business strategy of assets will not be affected by the usual excessive withdrawal.

***Third***, liability management is able to adjust itself according to the cost of the interest rate offered to borrowers. If commercial banks borrow more capital, it only needs to raise deposit rates until it receives enough capital. Commercial banks may also reduce interest rates to limit capital inflows.

However, this method is quite expensive because the bank has to borrow additional money with interbank interest (wholesale) to pay for deposits with retail interest rates[20]. In addition, borrowing costs of banks are often difficult to determine, reducing the stability of income. Moreover, banks that fall into financial difficulties often have the greatest demand for liquidity, the depositors are gradually aware of the bank's difficulties and begin to withdraw capital. At the same time, other financial institutions also did not want to lend to banks for fear of risks.

#### *1.3.3.2 Asset management method*

Instead of borrowing in the money market to meet liquidity needs, banks will prioritize holding and accumulating highly liquid assets. When a liquidity demand appears, the bank will sell some assets until it meets the requirements. The bank's most liquid assets are usually cash, deposits at other credit institutions, bonds, promissory notes, treasury bills, etc.

This is the traditional method commonly used by banks because of less risk. However, this method also has some limitations:

a) Selling an asset means that the bank accepts to lose the profit that the asset creates, besides the sale of the asset will also be related to the costs for brokers.

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[20] Interest rates that banks apply to deposits are retail interest rates, lower than wholesale rates in the interbank market, thus making banking business profitable.

b) To minimize the opportunity cost for not receiving income from assets, the bank must first sell off the lowest potential income assets such as the less risky securities of the Government. The sale of assets to enhance liquidity will weaken the image of the bank through the balance sheet, the public gradually loses confidence in a financially sound bank.

#### *1.3.3.3 Management methods of liability and asset combination*

Each of the above methods has their own strengths and weaknesses, so banks often combine the use of both liability management method and asset management method to maximize strengths and limit weaknesses.

With this method, a part of the liquidity demand is expected to be met by the reserve of liquidity assets (mainly valuable papers and deposits at other credit institutions), while the remaining part of the demand will be met by borrowing in the money market. Demand for unusual or seasonal liquidity will be handled by borrowing in the money market, while cyclical liquidity will be addressed by reserving highly Liquidity assets.

## 1.4 Domestic and international experience in liquidity risk management

According to the liquidity crisis from domestic and international, the lesson for liquidity risk management will be provided from historical experience.

### 1.4.1 Liquidity crisis at Asia Joint Stock Commercial Bank in 2003

Asia Joint Stock Commercial Bank (ACB) was established in 1993 and is considered as one of the highly reputable and healthy commercial joint stock commercial banks. On October 4$^{th}$ 2003, the Asia-Pacific Quality Organization (APQO) awarded the Asia-Pacific quality excellence award to this bank[21]. However, in 2003, ACB fell into a liquidity crisis. The specific developments are as follows[22]:

Since early October 2003, some bad guys reported that Mr. Pham Van Thiet, ACB's General Director abused the fund and fled and was arrested. Some even call directly to many ACB customers saying that this bank is about to go bankrupt.

From October 12th to October 15th , a series of people gathered at the head office and branches of ACB to ask for withdrawals. Until the morning of October 15th, the line of people still queuing up at the ACB headquarters continued to create tensions about withdrawing money. They still decided to withdraw even though it was explained to be a rumor. The total amount of payment exceeds the amount of VND 2,000 billion.

On October 14th, Mr. Tran Ngoc Minh, Director of the State Bank branch in Ho Chi Minh City presided over the press conference to announce officially rejecting rumors about ACB. At 17:30 on October 14, Mr. Le Duc Thuy, the SBV governor was present at ACB's headquarters and informed about the rumors that caused serious consequences and ensured the safety of depositors.

To ensure safe payment for ACB, after supporting ACB to borrow VND 500 billion on the evening of October 14th, on the morning of October 15th, the State Bank continued to support ACB with VND 1,400 billion. Other banks also actively supported ACB. Also on October 14th, Vietcombank Branch in Ho Chi Minh City lent ACB USD 7 million; Saigon Thuong Tin Bank lent USD 2 million. Dong A Bank, Eximbank, BIDV's branch in Ho Chi Minh all supported ACB with their material and spirituality. From October 15th, the number of people withdrawing at ACB has decreased, some people have sent it back.

On October 16th, the difficulties of ACB was over, all transactions returned to normal. ACB will carry out a refund campaign for customers if they return and reward customers

[21] ACB received "The Asia-Pacific International Quality" Award (2003). URL: http://pda.vietbao.vn/Kinh-te/ACB-nhan-giai-Chat-luong-quoc-te-chau-A-Thai-Binh-Duong/20028877/90/ (September 10th, 2003)

[22] VTC News (2017): *Crisis at ACB*. URL: https://vtc.vn/khung-hoang-tai-ngan-hang-acb-tag304067/ (August 23rd , 2017)

who do not withdraw from ACB in the above period. Time of interest refund is only implemented until August 31st, 2003. ACB also won a prize of VND 200 million if anyone provided information for authorities to find out the bad guys of rumors.

The crisis originated from the rumors. No one can deny the power of information, especially rumors. False information, misrepresented facts will bring incalculable consequences. Recognizing this importance, more than anyone, to avoid risks, the managers of the banks must first behave correctly, the state management agencies have responsibilities and communication agencies are present timely, ensuring the banking system in particular and enterprises, in general, a healthy operating environment.

### 1.4.2 Several banking liquidity crises around the world

The liquidity crisis in Argentina, Russia, the UK, the US and the causes will be presented.

*(1) The liquidity crisis in Argentina in 2001*

In 2000, Argentina announced austerity plan, cut spending and seek help from the International Monetary Fund (IMF). In November 2001, suspicious Argentines withdrew about $ 1.2 billion from their bank accounts. In December 2001, the Government intervened to prevent money from flowing out of the bank. A withdrawal limit of USD 1000/month has been issued. The 10-year government bond deposits has been replaced[23].

In January 2002, floating money, Peso was depreciated 29%; USD/peso = 1.4. In December 2002, USD/ peso = 2.6. The Argentines have withdrawn over $ 100 million from the bank every day. The Government has issued a new withdrawal limit of USD 500/month.

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[23] The Vietnam Financial Times (2015). URL: http://thoibaotaichinhvietnam.vn/pages/quoc-te/2015-07-09/nhung-vu-vo-no-dinh-dam-nhat-lich-su-22541.aspx (July 09th, 2015)

In March 2002, the bank's assets were converted into Pesos while deposits were in USD. Banks expected to lose about USD 10-20 billion due to this conversion. USD/peso = 3.75, banks begin to lack cash. In April 2002, Argentina requires banks to close indefinitely[24].

The main causes of the 2001 liquidity crisis in Argentina are:

a) Argentina is experiencing economic recession. Many foreign investors have closed accounts at Argentine banks.

b) Depositors including individuals and businesses lose confidence in government, government policies and the banking system. When the confidence has been reduced, any depositors are worried about their deposits, they are afraid of not being able to recover if the bank is bankrupt or closed so impatient to withdraw money from the bank account.

c) While depositors lose confidence and want to withdraw money from banks, fluctuations in exchange rates between the Dollar and the Peso further increase the level of liquidity crises. The devaluation of the Peso against the Dollar caused losses to Peso depositors and wanted to withdraw Peso deposit accounts as soon as possible to avoid further losses.

d) The intervention of the Central Bank of Argentina by issuing monthly withdrawal limits/individual deposit accounts reduces the amount of withdrawals on the account but increases the number of people who withdraw money because the Central Bank must control the amount of money withdrawn every month. The depositors have the basis to worry about the liquidity of the bank and want to withdraw more.

The deepening crisis of Argentinian banks in 2001 was ranked by the world financial analysts as the worst 12 bankruptcy cases in history with 5$^{th}$ rank.

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[24] NDH News (2018): *Argentina Crisis*. URL: http://ndh.vn/khung-hoang-leo-thang-argentina-nang-lai-suat-len-60--20180831011923240p149c166.news (August 31$^{st}$ , 2018)

*(2) Liquidity crisis in Russia in 2004*

In July 2004, Russian banks faced a huge risk of liquidity risk. On July 9th 2004, Guta Bank, a giant in the Russian banking industry, announced to temporarily blocked all deposit accounts nationwide due to payment in June to exceed 10 billion rubles, equivalent to (345 million USD). The bank has closed 76 branches and stopped more than 400 ATMs[25].

On July 10th 2004, immediately after Guta Bank blocked deposit accounts, people rushed to withdraw money from other banks to prevent falling into the same situation.

On July 16th 2004, Russian banks refused to provide credit to each other, deposit interest rates increased but customers still massively queued outside banks' buildings to wait for their withdrawal.

On July 17th 2004, Russia's fourth-largest bank, Alfa Bank, decided to take urgent measures to pay 10% of the amount if the customer withdrew before the deadline. At the same time, the press quoted a Russian financial regulator saying 10 more banks may be closed soon. However, some mass media have revealed that they have a blacklist with 27 banks on the verge of bankruptcy.

On July 18th 2004, the Governor of the Russian Central Bank, Sergei Ignatiev, and President Putin announced that there was no blacklist and such a crisis was temporary due to psychology. Mr. Sergei Ignatiev decided to reduce the cash reserve ratios of banks by 7% from 3.5% to increase liquidity, and apply a series of measures to save Guta Bank.

On July 20th 2004, many banks collapsed. Depositors flocked to banks to withdraw money with the concern that the 1998 financial crisis would recur and that they would lose their lifelong savings. The government's response includes plans for Vneshtorgbank of the State to acquire Guta Bank.

On July 27th 2004, Vice President of the Russian Duma Finance Committee, Mr. Pavel Medvedev announced in the week, banks would escape the current bad situation.

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[25] The Vietnam Financial Times (2015). URL: http://thoibaotaichinhvietnam.vn/pages/quoc-te/2015-07-09/nhung-vu-vo-no-dinh-dam-nhat-lich-su-22541.aspx (July 09th , 2015)

In August 2004, the Government bought big banks at surprisingly cheap prices. Putin succeeded in strengthening the state's role and ownership in the banking industry - which was massively privatized after the former Soviet Union collapsed.

The main causes of the 2004 liquidity crisis in Russia are[26]:

a) According to experts, the crisis is very likely to occur because Russia currently has too many banks, most of which are small financial institutions that exist by illegal activities.

b) Banks have too small capital. Currently, 90% of banks here have a capital of less than 10 million USD.

c) In addition to measures to reduce the ratio of cash reserves, the Russian financial management agency has not given any other effective measures to solve the problem.

*(3) The 2007 liquidity crisis in the UK*

a) The liquidity crisis at Barings

Barings Bank is the oldest, reputable and highly prestige investment bank in the UK, founded in 1762. Barings is so reputable that Queen Elizabeth is also one of the bank's traditional customers. However, a major incident occurred with Barings when Nick Lesson, Director of the Barings branch in Singapore fled in 1995. The lesson then used the $ 1.4 billion worth of bank capital that should be used for future projects on speculation to buy real estate stocks at Tokyo Stock Market[27].

Terrifying earthquake in Kobe city, Japan in the same year made Lesson lose the sum of $ 1.4 billion of stock - equivalent to the annual accumulated Barings profit. When Lesson fled and the incident was revealed, all of Barings' customers rushed to withdraw their money,

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[26] VnEconomy News (2014): *The Russian economic crisis*. URL: https://vnexpress.net/kinh-doanh/loi-ra-cho-khung-hoang-kinh-te-nga-3124595.html (December 23rd, 2014)

[27] VnEconomy News (2014): *Britain is in the shadow of the credit crisis*. URL: http://vneconomy.vn/tai-chinh/nuoc-anh-truoc-bong-den-khung-hoang-tin-dung-66338.htm (September 19th, 2007)

leading to the bank's bankruptcy on February 26, 1995. This is considered an event that not only shook the British banking system but also many big banks in the world took it as a lesson.

After bankruptcy, German's ING financial firm bought Barings for £ 1. The lesson was extradited to Singapore, where he spent six and a half years in prison for fraud. The lesson is currently managing a football team in Scotland.

b) The liquidity crisis at Northern RockBank

Northern Rock was established in 1965 on the basis of merging two credit institutions, Northern Counties Permanent Building Society and Rock Building Society. It is headquartered in Newcastle (England). In 1997, Northern Rock was officially listed on the London Stock Exchange. It is a medium-sized commercial bank in the UK, especially in the area of the mortgage loan, it ranked the fifth of largest banks. Before the incident, Northern Rock's performance is considered as quite healthy. Below are details of the impact of liquidity risk on the collapse of Northern Rock. Northern Rock forecasts that profit before tax will fall from its original estimate. Northern Rock has a lot of sensational information: Northern Rock is in the scarcity of cash, Northern Rock is carrying the consequences of rampant mortgage loans, etc.

In three days 14,15 and 17/9/2007 about £ 3 billion were withdrawn. Thanks to the help of the Bank of English, Northern Rock does not lack cash, but the number of people withdrawing money is not reduced. The Central Bank of England has to help by injecting a large amount of cash into Northern Rock. In 2008 after the world financial crisis, the British government officially decided to nationalize the bank for a long time. It can be said that liquidity risk has some effect on Northern Rock's weakness and collapse.

The main causes of this crisis are[28]:

a) Credit risks faced by this bank. Northern Rock's biggest mistake is to continue pawning credit five times as much as its borrower's salary. When making mortgage loans, Northern Rock has lent 125 percent of the mortgage value of borrowers, despite warnings

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[28] VnEconomy News (2007): *Britain is in the shadow of the credit crisis*. URL: http://vneconomy.vn/tai-chinh/nuoc-anh-truoc-bong-den-khung-hoang-tin-dung-66338.htm (September 19th, 2007)

about economic instability and fallen Real estate price forecasts. The wrong mortgage loan made Northern Rock's assets last for a long time and was constantly inflated. Therefore, when being affected by the subprime lending market of the US falling into crisis, the lack of capital is understandable;

b) The leakage of information makes the media take part and make things worse. It is also an impact that makes the crisis more adverse and has serious consequences.

*(4) The 2007 liquidity crisis in the US*

In August 2007, a financial crisis in the subprime mortgage market took place in the US and quickly spread throughout the world. The crisis has caused a series of financial and banking organizations suffered badly; some subprime mortgage lending companies must file for bankruptcy, while the central bank itself in countries such as the US, Europe, and Japan, etc. must simultaneously inject money into the banking system to save the risk of collapse of the entire financial system due to extremely bad liquidity status. The main reasons are[29]:

a) Credit rating and classifying organizations have contributed to legalizing a high-risk derivative financial product to put it into trading on the financial market. At the same time, it seems that investors are overly optimistic about the profit forecasts and assess the credit score of financial institutions higher than its reality.

b) Due to the loose in evaluating and approving loans of banks. They lent too much to customers with poor credit scores.

c) Banks jump into the game and create a derivative product from subprime loans. Its impact is a huge increase in capital inflows into the housing market and push housing prices continue to rise.

When the housing market reversed, the US Federal Reserve's interest rate soared to cope with inflation in the US, the causes of the above risks began to reveal. The crisis in the housing market has appeared and spread rapidly, causing a series of real estate companies to

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[29] VnEconomy News (2008): *US credit crisis: Looking back a year*. URL: http://vneconomy.vn/the-gioi/khung-hoang-tin-dung-my-mot-nam-nhin-lai-2008080203134562.htm (August 2nd, 2008)

fall into bankruptcy, high bad debts of banks, and the liquidity of subprime loans to become bad. In that situation, most financial institutions stopped to inject capital into buying financial products, which are collateralized debt obligations. Since then, the capital into this market has been closed, causing the crisis to happen and the increasing severity.

### 1.4.3 Lesson in liquidity risk management

Based on the analysis of some liquidity crisis cases, some lessons can be drawn, as follows:

***Firstly***, build a risk management framework for the whole network, including basic items such as goals, policies, processes. Vietnamese commercial banking system or each banking group with many things in common can cooperate to build.

***Secondly***, commercial banks need to measure, analyze and calculate reasonable numbers of liquidity reserves so as not to have a surplus of cash in the budget, and ensure liquidity safety as well. Liquidity conditions are often ensured not only by short-term, quality credits but also by investments in valuable papers that are easily convertible to the market.

***Thirdly***, it's necessary to effectively control credit operations by specific standards, avoiding rampant lending with a loose appraisal process. Especially for sectors such as real estate, whether for loans for real estate investment or for real estate use such as collateral/loan security, credit institutions also need strict regulations to monitor both before and after disbursement.

***Fourthly***, commercial banks need to be alert and proactive in identifying and preventing liquidity risk. The Risk Management Committee needs to have measures to coordinate between the liquidity management of liabilities and liquidity management of assets to be able to take advantage of the cash in the budget and ensure the mobilization of capital in case of high demand. In particular, commercial banks should be aware of any risks that may affect the liquidity of banks, especially credit risks. Credit risk and liquidity risk are closely related.

***Fifthly***, commercial banks always have to improve macroeconomic forecasting in order to prepare for the fluctuations in the financial and monetary market. Unexpected fluctuations can seriously affect the bank business.

***Sixthly***, commercial banks need transparent information about liquidity risk so that customers and partners can understand the liquidity situation, feel more confident in the operation of the bank, avoid the rumors that can occur and affect the prestige and confidence crisis in the public. With the lack of transparency in finance as in Vietnam, banks have all classified information about the liquidity of high confidentiality, so the request for disclosure is certainly not simple.

# II. ANALYSIS

# 2 ANALYSIS OF THE SITUATION OF LIQUIDITY RISK MANAGEMENT OF MILITARY BANK'S ACTIVITIES

The author analyzes the qualitative of liquidity risk management in the real situation in business activities of the Military Commercial Joint Stock Bank (MB). There are three problems presented in detail:

(1) The overview of MB; analyzing the business activities of MB during the 2014 – 2017 period in three respects: the fluctuation of assets, the source of capital and structure of the property, raising capital and credit;

(2) Analyzing liquidity risk management of MB in reality; the policy of liquidity risk management, the measurement of liquidity risk management and the examine activities, the preventive measures of liquidity risk management are presented in details;

(3) The approached results are evidence showing the existing limitation and its causes.

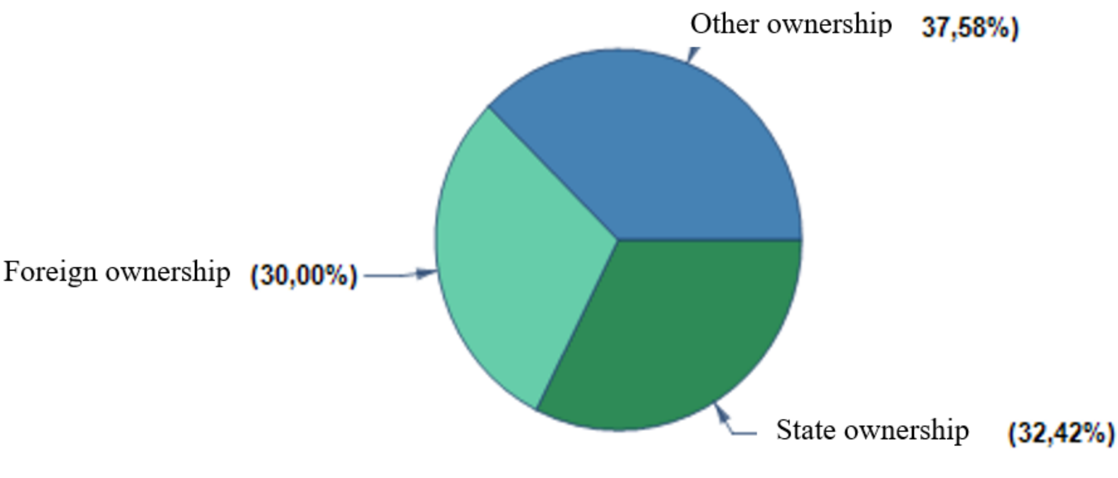
## 2.1 Overview of Military Bank

The history of establishment, development and organizational structure and business operation of MB will be summarized from 1994 to 2017 period and 2021 period will be further described as the prediction.

### 2.1.1 History of establishment and development

Military Commercial Joint Stock Bank, abbreviated as Military Bank or MB, is a joint-stock commercial bank of Vietnam and an enterprise under the Ministry of National Defense. In the 1990s, the economy in general and military enterprises, in particular, faced numerous difficulties in capital for production and business activities. From the initial need to find solutions to support military enterprises, the idea of establishing a financial institution as a model of other developed countries was gradually formed. After a long period of research and preparation, on November 04th, 1994, MB has officially launched and put into operation. As of the date June 30th, 2018, the shareholder structure of the MB includes: State ownership, accounting for 32.42 %; Foreign ownership 30 % and other ownership 37.58 % (Figure 2.1)

**Figure 2.1: Structure of shareholders of MB[30]**




In 2017, the bank's charter capital is 18.155 trillion Vietnam Dong, total assets are more 300 trillion Vietnam Dong. The major shareholders of the Military Bank are Vietcombank, Viettel, and Vietnam Helicopter Corporation.

**Table 2.1: The main shareholders of MB**

*(Source: https://www.mbbank.com.vn/ (Update December 31st 2017)*

| Name of shareholder | Ratio (%) |
|---|---|
| Viettel Group | 14.61 |
| State Capital Investment Corporation | 9.74 |
| Corporation Helicopter Vietnam - Company Limited | 7.76 |
| Saigon NewPort One Member Limited Liability Corporation | 7.45 |
| Joint Stock Commercial Bank For Foreign Trade Of Vietnam | 6.97 |

In addition to banking services, MB also participated in the stock brokerage, fund management, real estate business by holding a controlling stake in some businesses in this field. In terms of MB's network, December 31st 2017, it basically is quite comprehensive

[30] As of 30/06/2018. URL: https://www.stockbiz.vn/Stocks/mbb/MajorHolders.aspx

when the bank has a network throughout the country, including 01 headquarters with 94 branches and 188 transaction offices across the whole country. The MB's international network has 02 branches in Laos and Cambodia, and one representative office in the Russian Federation[31].

**Table 2.2: Subsidiaries, joint ventures and associates**

*(Source: Annual Report 2017 of MB)*

| Company name | Charter capital (million dong) | Owning rate (%) |
|---|---|---|
| Mb Bank Debt Management And Asset Exploitation Company Limited (MB AMC) | 1.082.689 | 100.00 |
| MB Shinsei Limited liability Finance Company | 500.000 | 50.00 |
| MB Capital Management Joint Stock Company (MB Capital) | 323.795 | 90.77 |
| MB Securities Joint Stock Company (MBS) | 1.221.000 | 79.52 |
| Military Insurance Corporation (MIC) | 800.000 | 69.58 |
| MB Ageas Life Insurance Company Limited | 1.100.000 | 61.00 |
| MBland Joint Stock Company (MB Land ) | 653.730 | 65.29 |

The process of formation and development of Military Bank marked some outstanding achievements through the main below stages.

#### *2.1.1.1 1994 – 2004 period*

MB was formed from the original idea that was to build a credit institution to serve the military business in the pre-integration business. On November 4th 1994, Military Commercial Joint Stock Bank was established with a capital of nearly 20 billion Vietnam Dong,

[31] Annual Report 2017 of MB

25 persons and a single transaction at 28A Dien Bien Phu, Hanoi. The first ten years (1994 - 2004) are the stage to be "open up" motto to shape, define business strategies and identify the brand. It can be said that MB Bank has closely followed the goals and long-term vision, flexible application of reasonable solutions to gradually accumulate experience and financial capacity, step by step affirming its role and having made important contributions to the development of the economy, contributing to the implementation of the military-economic tasks. This helped MB overcome the crisis of Asian financial in 1997 and have interest during this time. In 2004, the 10th anniversary of its founding, the total mobilized capital of MB increased over 500 times, total assets were over 7,000 billion Vietnam Dong, profit was over 500 billion Vietnam Dong and opened the new office at No. 3 Lieu Giai, Ba Dinh, Hanoi.

#### *2.1.1.2 2005 – 2009 period*

This period marked a comprehensively change, creating an important foundation to develop strongly in the following years. During this period, MB Bank applied a series of overall innovation solutions from expanding the scope of operations, developing network, investing in technology, strengthening personnel, strongly targeting customers with separation of management functions and business functions between Head Office and Branches, reorganizing business units according to individual customers, small and medium enterprises, capital sources and currency trading, etc. In the period of 2005 - 2009, it can be said that MB created a solid foundation to promote the implementation of future strategic initiatives, contributing to making MB become one of the leading financial institutions in Vietnam today[32].

#### *2.1.1.3 2010 – 2016 period*

MB started to research and develop a new strategy for the period 2011-2015, with the expectation to bring MB Bank into the TOP 3 joint stock commercial banks, not controlled by the state. This is also a very difficult period in the economy. Under the impact of

[32] In 2009, marking 15 years of development, MB Bank was awarded the Third Class Labor Medal by the President of the country. In 2014, MB Bank was honored to receive the First Class Labor Medal. By 2015, it was again awarded the title of Hero of Labour.

the global economic crisis, the Banking industry implemented a strong restructuring, many banks reduced their profits, even merged, resold at 0 Vietnam Dong. In that context, MB Bank steadfastly with the strategy of sustainable development and safety has led the way in many important financial indicators, achieving the goal of being in the TOP 3 before 2 years (in 2013).

With the achievements, 2016 is a stepping stone to transfer between two strategic periods 2011 - 2015 and 2017 - 2021. In this year, MB Bank continued to establish two new member companies in the fields of Life insurance and consumer finance respectively namely MB Ageas Life and MCredit, consolidating the model of multi-functional finance group. The firm foundation that MB Bank has built in recent years will create a sustainable development momentum for MB Bank in the new period.

#### *2.1.1.4 2017 – 2021 period*

Being a top-ranking enterprise among commercial banks, MB Bank officially implemented the strategy for the period of 2017 - 2021 with the motto “Breakthrough growth, Efficiency and Safety”; based on 3 pillars: community banking, professional banking by industry and digital banking; based on 2 platforms: dominant risk management and fast execution capability. With the new strategic orientation, MB has implemented many solutions to improve risk management capabilities with the goal of accompanying business, meeting the trend of the financial market as well as the requirements of Basel II compliance of the SBV.

### 2.1.2 Organizational structure and business operation

MB’s operational model is organized in a light and compact manner, increasing the management and administration capacity of agencies from Head Office to subordinate units. In addition to the Board of Directors, Supervisory Board and professional agencies assisting the Board of Directors (Office of the Board of Directors, Credit Committees, ALCO, Committee on Human Resources and Management Board of the Bank) are responsible for directing and operating daily activities of the Bank, the remaining apparatus is organized according to the main functions.

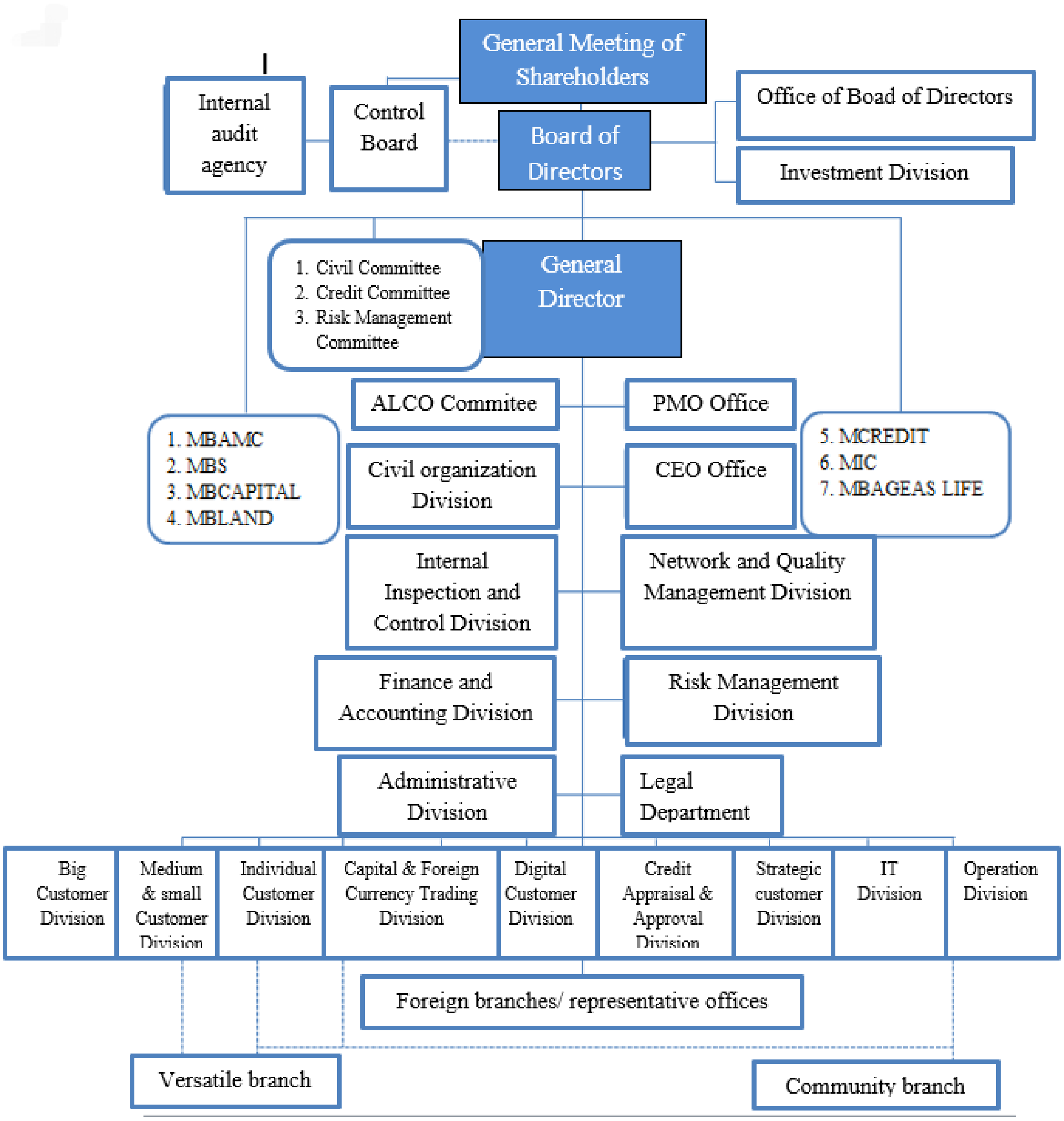
System management agencies: Including the Divisions and the departments to advise and support the Management Board in managing the system in separate professional areas. These agencies have the task of building and implementing management principles and mechanisms with the aim of strongly supporting business Divisions and promoting business activities of the whole Bank. The system management agencies include Internal Control Division, Finance & Accounting Division, Risk Management Division, Credit Approval Division, Human Resource Division; Strategic Deployment Offices and Office of CEO, Investment Committee and Basic Construction Department and Political Department. MB is also the only Joint Stock Commercial Bank with a Political Department in the organizational model. This is the agency responsible for taking care of the Party and Political work of the whole bank.

Business Divisions are organized in depth according to each customer and market segment, including the Capital & foreign currency trading Division, the Large Business Division and the Financial Institutions, the Small and Medium Business Division and the Science and Technology Division. Business divisions are responsible for building product policies, business programs for each customer segment and supporting branches in implementing action programs of Divisions as well as daily business activities related to their own customer segment. Business Divisions in the Head Office also performs vertical axis management, supervise and monitor the implementation of business plans at units.

Business support Divisions: Including Operation Division, network and distribution Division and IT Division. These Divisions have the function of building “infrastructure” to deploy daily business activities, building and maintaining the processes of providing MB products and services with high quality, ensuring risk prevention and distribution, developing the Bank’s network and distribution channel as well as administrative activities. Branches, transaction offices, transaction points: are the focal point to provide a full package of solutions and products for customers, according to each location on the basis of MB’s policies and strategies from time to time.

**Figure 2.2: Organizational structure of MB**

*(Source: Annual Report 2017 of MB)*




In the report of vision and mission until 2021, MB aims to become a convenient bank for customers with 3 pillars: Community Bank, professional banks and banks dealing with selected market segments in large urban areas, focusing on:

a) Traditional corporate customers, economic groups and large businesses;

b) Selectively focusing small and medium enterprises;

c) Developing products and services for all customers;

d) Expanding business activities in the capital market;

e) Development of investment banking activities;

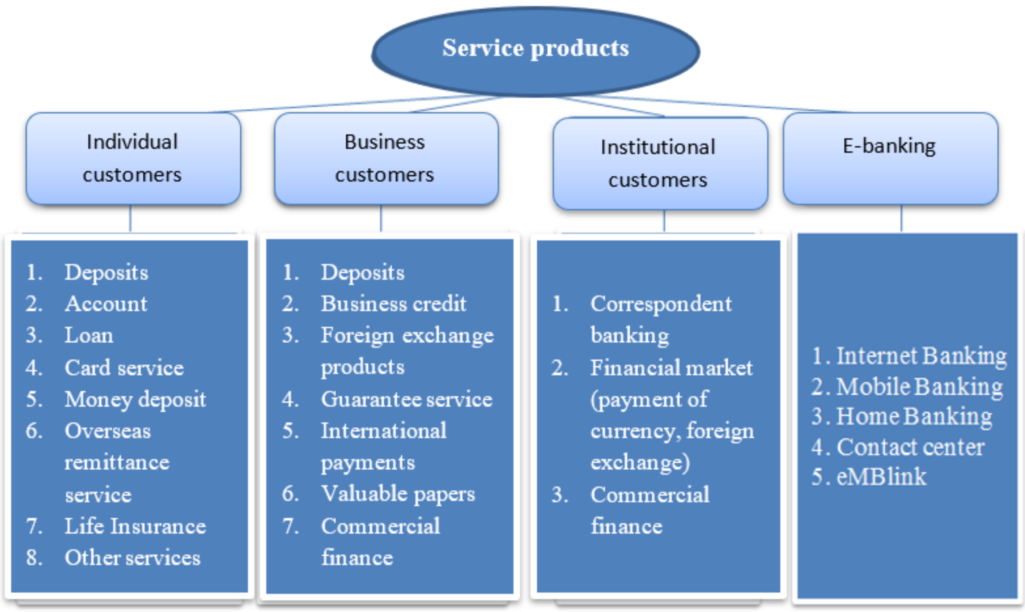
f) The close link between the Bank and its members to become a strong financial group.

MB Bank devotes all efforts to build a skilled and dedicated workforce in service to bring businesses and individuals financial - banking solutions with optimal costs.

In order to implement the committed vision and mission, MB has launched many diversified and modern products and services to meet the needs of many different customers, which are summarized in the following diagram:

**Figure 2.3: Main products and services of MB**

*(Source: https://www.mbbank.com.vn)*



## 2.2 Business activities of Military Bank in the period of 2014-2017

After analyzing the changes in assets, capital sources and asset structure; capital mobilization and credit activities, the business results of MB will be presented.

### 2.2.1 Business activities of Military Bank in the period of 2014-2017

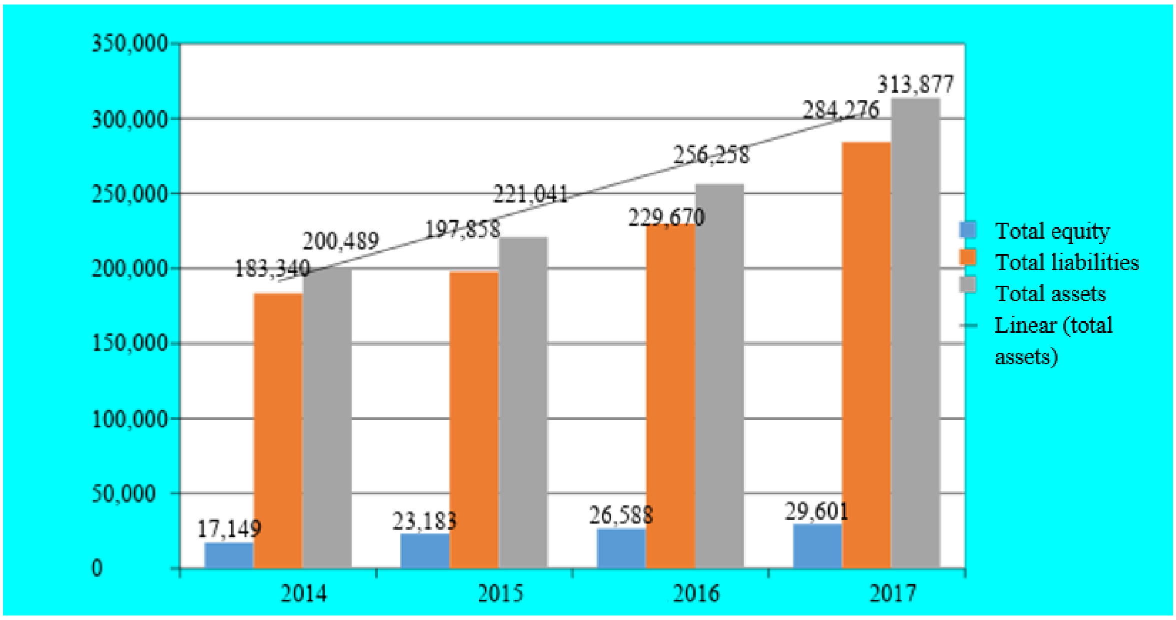
The change in assets, capital sources, and asset structure will be analyzed.

#### *2.2.1.1 Regarding asset and capital changes*

The general indicators of asset - the capital source of MB over 4 years, from 2014 to 2017 shows that the scale of total assets of MB increased steadily. In the context of the complicated world and Vietnam economy, affected by the global economic recession, the growth rate has increased steadily and continuously. By 2017, total assets reached 313,877 billion Vietnam Dong, increased by 57,619 billion Vietnam Dong, respectively 22.5% compared to 2016; the scale of total assets in 2017 increased by more than 1.6 times compared to 2014. The growth rate in 2017 was considerably high by many breakthrough policies of the whole industry, motivating the rise of bank stocks. Besides, the scale of high total assets helps MB improve its financial capacity and competitive position in the market and fight well with liquidity difficulties.

**Figure 2.4: General situation of assets, capital of MB, 2014-2017**

*(Source: Financial Statement of MB 2014 - 2017)*



### *2.2.1.2 Regarding assets structure*

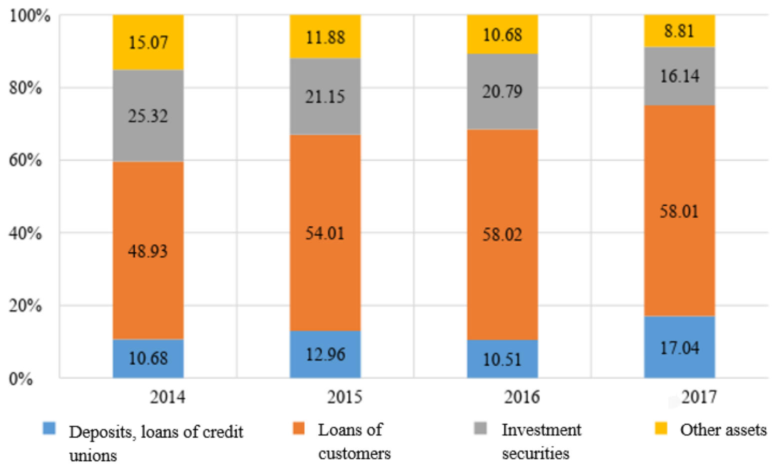
It can be seen in the structure of total assets, the items with high proportion consist mainly of deposits at other credit institutions, customer loans, and investment securities. In particular, the structure of investment securities is decreasing slightly in proportion, while deposits and loans at credit institutions tend to increase.

Although the proportion of investment securities decreased from 25.32% in 2014 to 16.14% in 2017, it still accounted for a large proportion (mainly Government bonds) to help MB to increase income from interest and ensure liquidity to meet the administrative requirements according to banking operational safety practices. The reduction of this proportion is in line with the strategy of diversifying income sources, finding other assets with high profitability but still having good liquidity.

Customer loans account for the highest proportion in the asset structure and tend to be stable over the years. However, in terms of credit structure on total assets in the financial statements of banks in 2017, MB's customer loans rate is still not high compared to other banks. This rate for large banks, such as BID is 71.15% and STB is 59.8 %[33].

**Figure 2.5: Structure of the assets of MB Bank in the period of 2014-2017**

*(Source: Financial Statement of MB 2014 - 2017)*




[33] BIDV's Finance Statement, STB in 2017

Although the proportion of customer loans to total assets of MB is still lower than some other banks, MB's credit portfolio is always controlled carefully. In fact, for many years, MB has maintained a good quality of credit portfolio and strictly controlled NPL to be maintained below 2.5%. After handling 345 billion Vietnam Dong of bad debt in the first quarter of 2018, MB's NPL is 1.41% compared to 1.2% at the end of 2017[34].

Through the fluctuation of the structure of total assets from 2014 to 2017, it can be seen that there is the change in business strategy, MB has been implementing diversification of business forms in terms of business operations. The bank is increasingly facing difficulties due to the fierce competition of competitors in the market and the conditions set by the SBV to ensure the safety of the Bank's operations. However, despite the transfer and diversification of business activities, it can be seen that the safety in investment strategies is always something that MB cares about.

#### *2.2.1.3 Regarding capital structure*

In the period of 2014-2017, customer deposits in the market in the capital structure of MB always accounted for the largest proportion of total capital. It was especially highest up to 83.59% in 2014, although gradually decreased in the following years, still maintains the proportion of over 70% of the total capital. This shows that MB is carrying out good customer attraction activities, reflected in trust, as well as customer satisfaction with the Bank. These are important factors in the Bank's operation in the current financial and monetary market.

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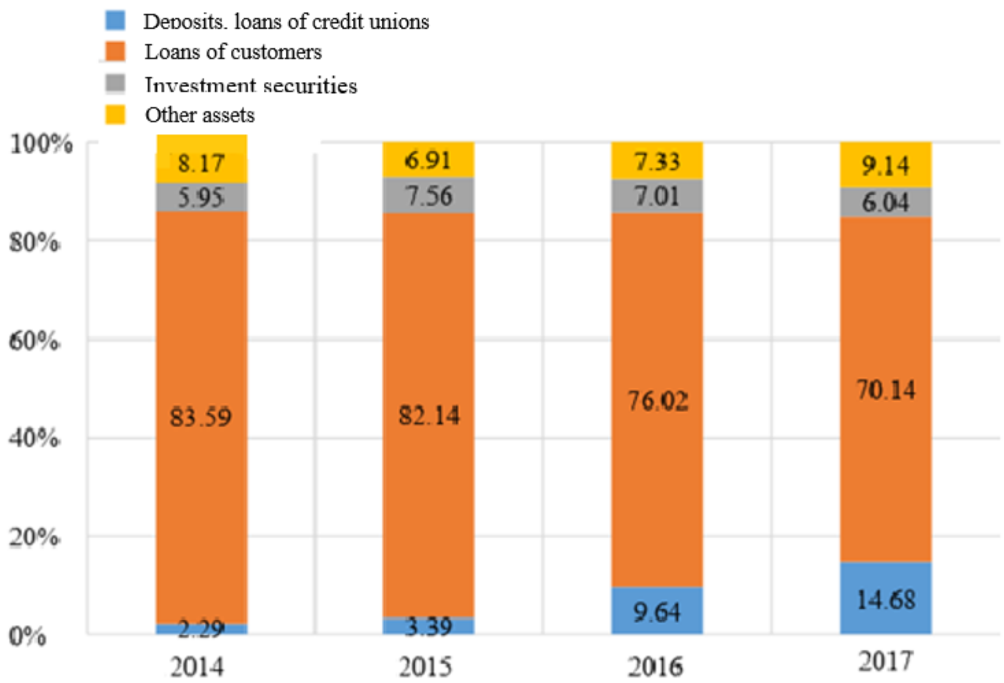
[34] CafeF Newspaper (2018): *What level of the bad debts of listed banks is*? URL: http://s.cafef.vn/mbb-265477/no-xau-cua-cac-ngan-hang-niem-yet-dang-o-muc-nao.chn (June 04th, 2018)

**Figure 2.6: Structure of MB's funds, 2014-2017**

*(Source: Financial Statement of MB 2014 - 2017)*




In the interbank market, though deposits and loans of other credit institutions accounted relatively small in 2014 with 2.29 %, it tends to increase strongly, reaching 14.68% in 2017. This shows that the interbank market is increasingly a big capital mobilization channel of MB Bank.

In the period of 2014-2017, MB's equity ratio tended to decrease slightly, remained stable with an average of 7%, reflecting the caution in mobilizing capital through the stock market, in the context of financial market has many changes. However, in absolute terms, MB's equity constantly increased over the years, which is mainly due to increase charter capital, in particular, the charter capital in 2017 was 18,983 billion Vietnam Dong, much higher than that of 3,000 billion Vietnam Dong at least according to SBV regulations[35].

[35] According to Circular No. 09/2010 / TT-NHNN providing for the establishment and operation license of commercial banks, newly established commercial banks must have a minimum charter capital of VND 3,000 billion. In the initial draft, the founding shareholders must meet the requirement of having a capital of VND 500 billion or more and must be profitable for three consecutive years.

On May 31st 2018, State Bank of Vietnam issued Document No. 3994/NHNN-TTGSNH on increasing the charter capital of the Military Bank by 21,604 billion Vietnam Dong and put it in a group of banks with the large capital increase[36]. Equity is always the first and important resource to conduct every business activity of every enterprise, especially commercial banks. This capital increase is important to leverage to help MB expand its business, develop new products and services and help banks grow faster in business scale and profitability.

In summary, on the basis of analyzing the capital structure of MB Bank, in the period of 2014-2017, although MB has not fully exploited the potential of capital mobilization in all channels , it still keeps good financial potential, such as charter capital is 6 times higher than the requirements of the State Bank; The bank still maintains a stable number of traditional customers; The proportion of customers who choose it to deposit is high, reaching over 70%, higher than commercial banks in the system.

### 2.2.2 Capital mobilization and credit activities

There are three main keys to be analyzed in details.

#### *2.2.2.1 Regarding capital mobilization activities*

The two main capital mobilization channels of MB are from market 1 and market 2.

[36] The bank of Viet Nam. (May 31st, 2015)

**Table 2.3: Capital mobilization activities of MB Bank, 2014-2017**

*(Source: Financial Statement of MB, 2014-2017)*

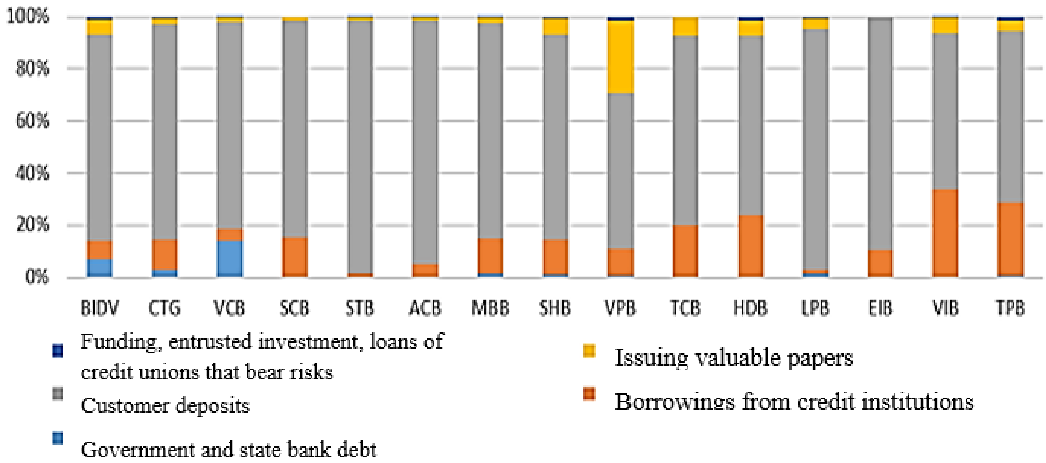
*Unit: Billion dong,%*

| Indicator | Absolute number | | | | Growth | | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2015 | 2016 | 2017 | 2015/2014 | 2016/2015 | 2017/2016 |
| Deposits, loans of credit institutions | 4.604 | 7.509 | 24.713 | 46.101 | 163% | 329% | 186% |
| Deposits of customers | 167.609 | 181.565 | 194.812 | 220.176 | 108% | 107% | 113% |
| Released valuable papers | 2.000 | 2.450 | 2.367 | 6.022 | 122% | 97% | 254% |
| Total mobilization | 174.213 | 191.524 | 221.892 | 272.299 | 110% | 116% | 123% |

Table 2.3 shows that the mobilization of capital from market 1 is still the core mobilization source, the most stable, accounting for the majority of MB mobilized resources and constantly increasing in the last year. Total mobilization maintained a positive growth rate in the context of the State Bank implemented a tightened monetary policy. Mobilizing capital from the market 2 also accounts for a relative proportion of the total capital mobilization of the Bank, however, the growth rate in 2017 compared to 2016 is lower, because the Bank has available mobilized resources in market 1 with low-interest rates and stable operation.

**Figure 2.7: Structure of CBs' capital mobilization in the third quarter of 2018**

*(Source: cafeF.vn9)*




Compared to many banks, customer deposits at MB account for big proportion in the structure of capital mobilization. This shows the "confidence" of the customer with MB is relatively good. However, it can be said that, in recent years, MB Bank has not yet effectively used capital mobilization from issuing valuable papers. This is a source of mobilization that brings efficiency, low interest rates and long-term stability. Starting from the high prestige of customers, MB can promote its advantages and promote more effectively the mobilization of capital through issuing bonds in the coming time.

#### *2.2.2.2 Regarding credit activities*

With the mobilized capital, MB allocates to various profitable channels of assets including customer loans, operations on interbank and securities investment markets, etc. Depending on the situation that MB can reserve different weight for each profitable item.

**Figure 2.8: Percentage of MB's outstanding loan/Mobilization market 1 in 2014-2017**

*(Source: Financial Statement of MB, 2014-2017)*

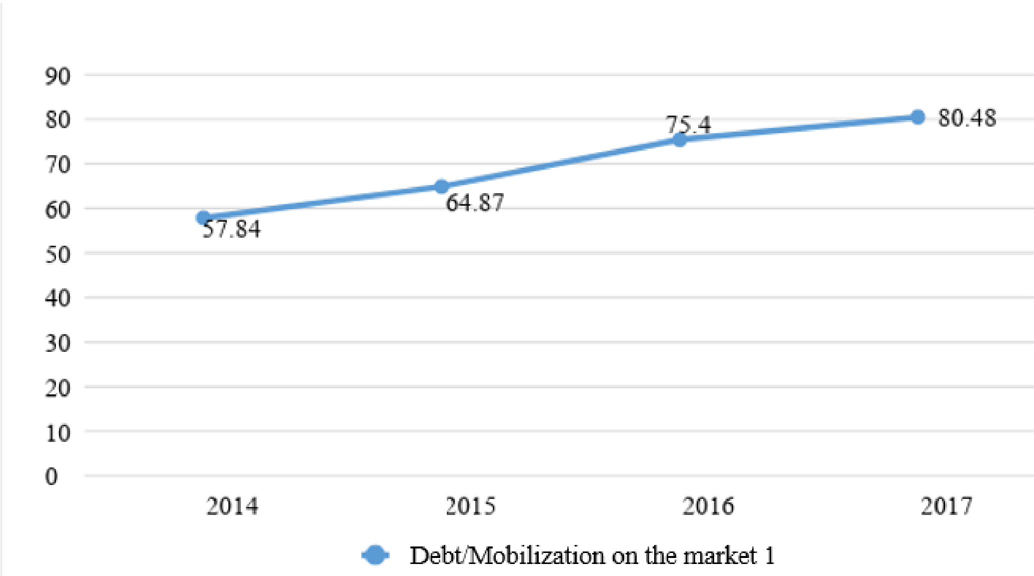


**Table 2.4: Percentage of MB's outstanding loans/Mobilization on the market 1 in 2017 compared to competitive banks**

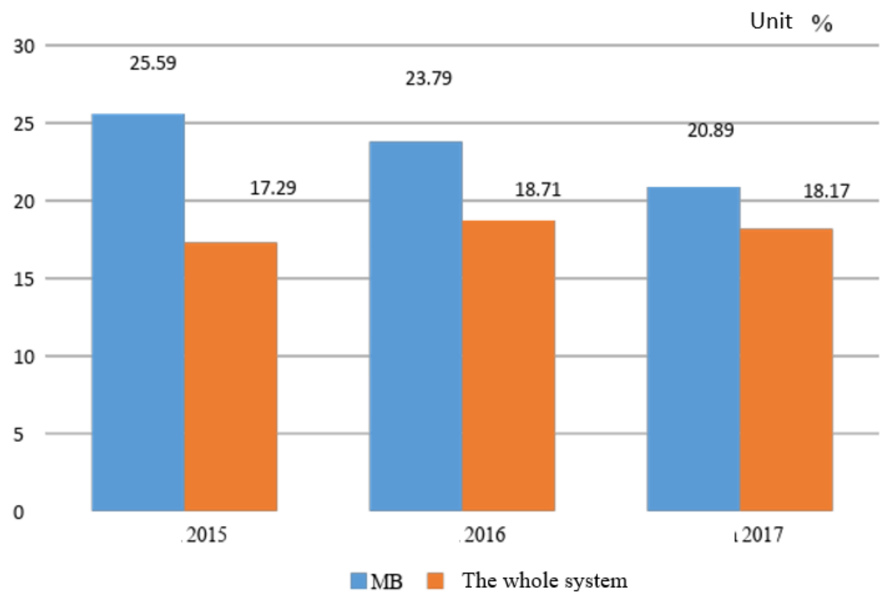
*(Source: Financial Statement of MB, 2014-2017)*

| Indicator | Comparison with competitive banks in 2017 (%) | | | | | | |
|---|---|---|---|---|---|---|---|
| | MB | EIB | STB | ACB | VCB | TCB | CTG |
| Outstanding/Mobilization on the Market 1 | 80.48 | 83.18 | 67.65 | 79.25 | 73.66 | 84.28 | 100.89 |

Figure 2.8 and Table 2.4 show that, although the amount of deposits mobilized is quite large from economic organizations and residents (market 1), MB still won investment priorities for credit activities, the average lending/mobilizing rate of the year reached nearly 70% and tended to increase gradually. However, in the context of the recovery and impressive development of Vietnam's economy in 2017, compared to other competitive banks, MB's loans/mobilization rate is relatively low, ranking fourth after Eximbank, Vietinbank, and Techcombank. This may be due to the managers of the Military Bank pursuing a cautious business strategy.

**Figure 2.9: Percentage of credit growth of MB Bank compared to the whole system, 2014-2017**

*(Source: Financial Statement of MB, 2014-2017)*



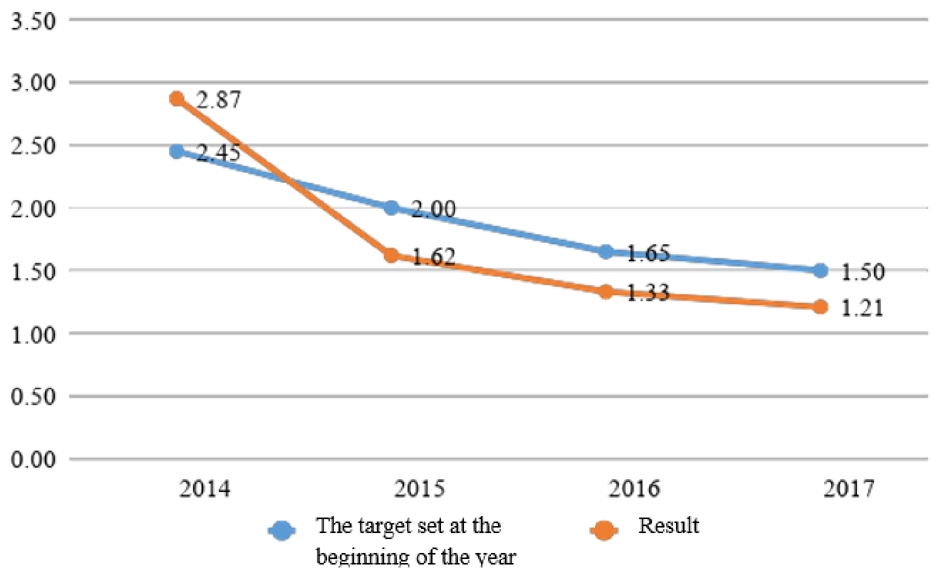
Loans of the Bank has constantly high growth rates in the recent period. Within 4 years, total loans of the MB system has increased 1.8 times, from 108.859 billion Vietnam Dong in 2014 to 196.990 billion Vietnam Dong in 2017. MB is always in the group of joint stock commercial banks with high credit growth rate, over 20% and much higher than the overall growth rate of the whole system, from 17% to 18%, in 2017 particularly is 18, 17 %. However, the growth rate of credit outstanding balance has gradually decreased over the years due to the influence of policies to control credit growth reasonably to contribute to the implementation of inflation control and support the growth, improve credit quality; actively control credit in some potentially risky sectors and fields.

#### *2.2.2.3 Regarding credit quality*

Although the bank has a high credit growth rate, according to the author, MB is ensuring a good credit quality principle in recent years, reflected that its credit portfolio is always strictly controlled; NPL ratio of the bank is within the safe threshold (Figure 2.10).

**Figure 2.10: NPL of MB in the period of 2014-2017**

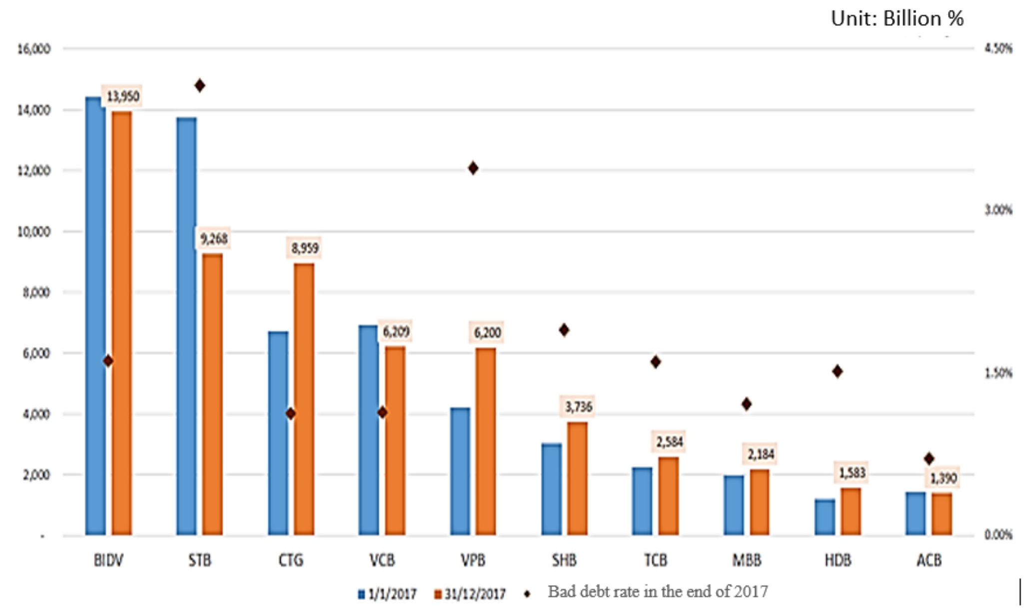
*(Source: Financial Statement of MB, 2014-2017)*




The proportion of debt groups under group 1 debt (standard debt) has not changed much over the years and always accounts for over 90% of total outstanding loans. Overdue debts (debts from Group 2 to Group 5) account for less than 10% of total outstanding loans. NPL has continuously decreased in the past years, because MB has maintained good credit portfolio quality, tightened bad debt control, always maintained a bad debt ratio and overdue debt lower compared to the whole bank. As of December 31, 2017, the bank's bad debt ratio was 1.21%, lower than the target of bad debt ratio below 1.5% in the plan of the year's beginning.

**Figure 2.11: Bad debt ratio of commercial banks in 2017**

*(Source: CafeF.vn )*




In 2017, compared to 09 banks (Figure 2.11), MB's bad debt ratio is only higher than 02 banks and lower than the average bad debt ratio of the whole industry. In general, MB's bad debt problem is well controlled compared to other big commercial banks.

### 2.2.3 Business results

In the period 2014-2017, while many other joint-stock commercial banks failed to meet the profit target set because the bad debt situation increased too high, it was forced to make provisions and mobilized. With high-interest rates to ensure liquidity, attract and retain customers, MB's profit remains high, ranking at the top of commercial banks, summarized in the following table

**Table 2.5: Profitability index MB Bank, 2014-2017**

*Unit: VND billion,%*

| Target | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Net interest income | 6,540 | 7,319 | 7,979 | 11,219 |
| Pre-tax | 3,174 | 3,221 | 3,651 | 4,616 |
| After tax profit | 2,476 | 2,496 | 2,855 | 3,520 |
| ROAA (%) | 1.3 | 1.18 | 1.2 | 1.23 |
| ROEA (%) | 15.62 | 12.56 | 11.47 | 12.53 |
| NIM (%) | 3.8 | 3.8 | 3.56 | 4.17 |

In 2014, MB completed well the plan, ensured growth in all targets, well complied with the guidelines and policies of the Government and the State Bank. Pre-tax profit was estimated at 3,174 billion Vietnam Dong, capital mobilization increased by 22%, total outstanding loans increased by 15.7% compared to 2013 and exceeded the plan for 2014. Total assets of the bank reached 200,489 billion Vietnam Dong, up 14.4%; charter capital reached 11,594 billion Vietnam Dong.

In 2015, MB set a big goal of completion, including:

a) Successfully implement the strategy for the period of 2011 – 2015;

b) Exceed the 2015 target;

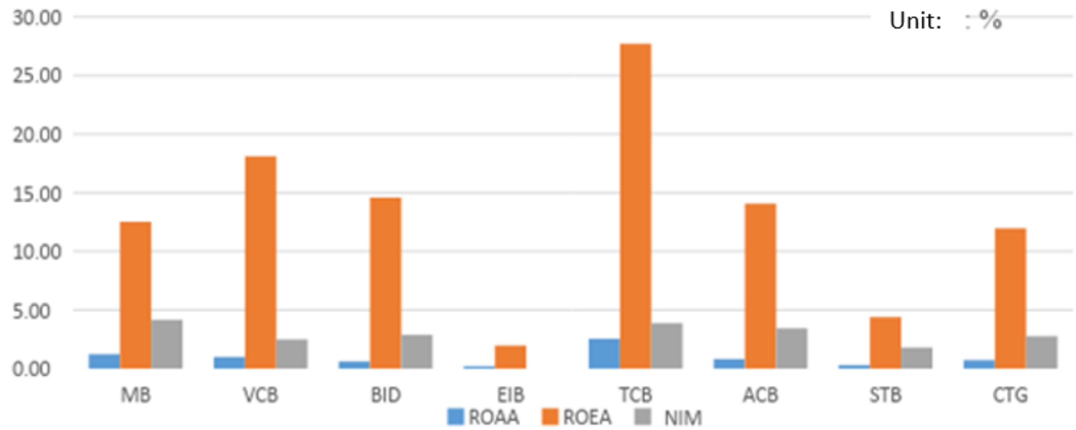
c) Continue to restructure branches and member companies. As a result, the bank's total assets reached 221,042 billion Vietnam Dong, increasing by 10.2% compared to the end of last year, and fulfilling 102% of the plan. For the whole year, the bank recorded 3,221 billion Vietnam Dong before tax profit and 2,496 billion Vietnam Dong after-tax profit, increasing 1.4% and 0.8% respectively compared to 2014.

In 2016, MB completed the tasks and business targets set out at the beginning of the year. In particular, it is worth noting that the bank's pre-tax profit reached 3,651 billion Vietnam Dong, an increase of 13.4% compared to 2015, exceeding 4.5% of the plan. MB continues to lead in profit in the joint stock banks without controlling the capital of the State. Total assets reached 256,259 billion Vietnam Dong, completing 104.3% of the plan; maintained in Top leading banks with ROAA performance of 1.2%, ROEA reached 11.47%.

In 2017, MB was impressed with the growth of 144.3% in profit (profit before tax was 4,616 billion Vietnam Dong). In business activities, net interest income reached 11,219 billion, up 40.6% compared to 2016 and accounted for 81% of total operating income of the bank. Net profit from service activities increased by 34% compared to last year, reaching 531 billion Vietnam Dong. Revenue gets from capital contribution, share purchase increased dramatically to 778 billion Vietnam Dong in 2017 thanks to the recognition of the profit rate arising from that MB sold part of its capital contribution from MB Shinsel Finance Company Limited (formerly the MB One-member Finance Company Limited) for Shinsel Bank Limited under the capital transfer contract dated November 21st, 2016.

**Figure 2.12: MB's 2017 profitability index with competitive banks**

*(Source: The author's synthesis from the 2017 financial statements of banks)*




In general, in the period of 2014-2017, MB's business results through statistics and financial indicators show that business activities in this period of MB are successful. The Bank is increasingly affirming its role and position as one of the great banks in Vietnam, has a reputation in the industry, has the financial capacity and high growth potential. Specifically:

a) Return on average assets (ROAA) reached 1.23%, ranked No. 2/8 by maintaining a stable total asset growth compared to other banks owing to the advantage of bright shareholders; Return on equity average (ROEA) reached 12.53%, ranked 6 out of 8;

b) The rate of net interest income (NIM) reached the highest rate with 4.17%, because MB has a strong close relationship with military enterprises, with strategic shareholders as Big Group such as Viettel, Saigon Newport Corporation, Vietnam Helicopter Corporation, etc., therefore, MB still maintains and attracts a quite good and stable mobilized capital with a low cost in the context of fierce competition. This is a significant advantage of MB compared to other commercial banks.

c) According to the rating results of the 2017 competitiveness of corporate performance management (CPM) Global, MB Bank belonging Group A is a group of banks with high competitiveness, are organizations with great market power and stable financial capacity, effective business operations and long-term development potential together with ACB, BIDV, DongA Bank, Eximbank, Sacombank, Techcombank, Vietcombank and VietinBank.

In another report, Vietnam Report 2017 also ranked MB Bank in the top 10 prestigious commercial banks in 2017 on the basis of 3 criteria:

a) Financial capacity and efficiency shown in the most recent audited financial statements (total assets, total revenue, after-tax profit, capital use efficiency, bad debt ratio, etc.;

b) Communication prestige is evaluated by Media Coding method - encoding articles about banking on the media;

c) Investigate and survey customers' awareness and satisfaction with products/services of banks; Investigate and interview in-depth financial experts on the position and reputation of banks in the industry; and survey the banks by themselves in terms of capital size, revenue growth rate, revenue, operation plans for the year, etc.

## 2.3 Liquidity risk management of Military Bank

Before measure liquidity risk, The overview of policies and organizations of liquidity risk management will be described. After measurement, the controlling and prevention for liquidity risk will be provided.

### 2.3.1 Policies and organizations of liquidity risk management

Based on the management documents of the Government and the State Bank of Vietnam over the past time, it can be said that the liquidity risk management in MB has been complied with well, sticking to the regulations on risk management in general, and liquidity risk management in particular in commercial activities of commercial banks.

In the risk management policy of MB, each division and unit is specified and clear about rights, obligations, and responsibilities. MB has applied the model of three protection rings to risk management activities of the bank to ensure clear separation of functions and tasks of the units, avoiding overlapping and increasing the sense of responsibility of the whole bank in risk identification, risk assessment, monitoring, and control. This model is clearly demonstrated by the effective and regular establishment and operation of supervisory from committees and specialized committees of the Board of Directors and the Executive Board such as the Risk Management Committee and the ALCO Committee, Steering Committee to handle risks of technology.

MB also organizes the management of vertical operations from the Head Office to the Branch. The potential risks of interest conflict such as sales, appraisal, approval and credit support are carried out by independent units, ensuring objectivity and transparency. The functions of system management feature such as appraisal, approval and credit support; accounting - finance, human resources, and information technology are centralized at the Head Office.

Specialized branches perform business functions within the framework of policies and regulations established by the Head Office and are subject to the supervision of the Head Office.

The departments and units closely incorporate risk management work, especially liquidity risk management are effectively implemented, minimizing the risk of liquidity issues. Specifically:

#### *2.3.1.1 The Head office*

Manage liquidity of the whole system, following the principle of centralized capital management. Liquidity management is carried out daily according to the strategy of the executive board, according to the policies and regulations decided by the risk management council after being approved by the board of directors. Each branch has its own regulations on liquidity management.

#### *2.3.1.2 Executive Board (General Director)*

There are seven main managerial functions:

a) Ensure the construction, full and clear establishment of detailed regulations, processes of risk management in general, the process of liquidity risk management in particular and the liquidity risk management department, ensuring sufficient human resources to implement;

b) Develop, establish and ensure the maintenance of management information system in accordance with liquidity risk management requirements;

c) Regulating the rights and obligations of each unit in risk management, liquidity risk management according to the organizational structure of apparatus, functions, and tasks assigned;

d) Develop, establish limits, methods, measurement models along with the establishment of assumptions based on the advice of the Risk Management Division to manage liquidity in accordance with the scale, complexity and financial conditions of the Bank;

e) Consider the daily liquidity of the Bank;

f) Report issues on liquidity and other issues arising to the Board and ALCO Committee monthly or as needed;

g) Announce information related to types of risks, including liquidity risk as requested by the Board.

#### *2.3.1.3 ALCO Committee*

There are five main managerial functions:

a) Advise the Board of Directors on the management ways and policies of each type of risks related to management of assets, Assets on the balance sheet, in order to maximize profits for banks in general and for shareholders in particular in the long term;

b) Directing MB's business units to operate their business in accordance with defined policies and guidelines to reasonably manage Liabilities – assets items in the bank's balance sheet;

c) Approve the structure of the summary of assets, types of assets and debts according to liquidity and maturity;

d) Consider and approve the measurement models and assumptions to build reports and limits of liquidity risk management in the competency based on the proposal of the General Director, monitor the liquidity situation and report to the BOD on liquidity activities and risk structure of the bank periodically and unexpectedly.

e) Propose to convene an emergent meeting when there are unusual issues related to the bank's liquidity, decide specific measures and report to the BOD on the meeting contents.

#### *2.3.1.4 Capital and business division*

There are four main managerial functions:

a) Make plans to use the capital for effective business within the permitted limit;

b) Manage and ensure daily liquidity within the limits prescribed by the SBV; regulate capital and be responsible for balancing the capital of the whole system;

c) Develop markets, establish and maintain relationships with market partners, handle situations to ensure that the ultimate goal is liquidity;

d) Coordinate with the Risk Management Division to propose liquidity limits in accordance with the operation plan, manage market access capabilities, update the capital market information, and thereby plan the backup project of liquidity.

#### *2.3.1.5 Risk management division*

There are four main managerial functions:

a) Advise the Executive Board (General Director) in developing risk management and risk management policies and procedures;

b) Measure liquidity indicators; measure and monitor the requirement for the net capital issuance for the whole system by each major currency and convert into VND;

c) Direct and coordinating with the Capital and Business Division to build and submit to the Executive Board (General Director) to promulgate assumptions applied in liquidity risk measurement, issue limits to limit and control of liquidity risk; continuously assess the appropriateness of the assumptions being applied;

d) Continuously monitor, analyze and evaluate the liquidity risk situation to report to the Board of Management, ALCO Committee, Capital Division, and Business Department, as well as related departments.

#### *2.3.1.6 Information technology division*

Information technology is always the top development priority in the banking system, especially in the context of the industrial revolution 4.0. Technology - Information Division plays a very important role in establishing and building a modern information technology system, is ready to meet the ability to pay and manage liquidity in the whole MB system, especially the research and development of reporting software, online utilities to directly serve the liquidity risk management work.

At MB, the awareness and responsibility of liquidity risk management work are widely recognized throughout the bank, by all employees in the system. MB has supported and committed to invest and paid attention to risk management from the Board of Directors and the Board of Management as well as the synchronous coordination among the units in the bank through councils, committees under the Board of Directors and the Executive Board. MB has also issued the risk appetite and policies of the whole bank, regulations and key risk management processes to ensure all units understand their responsibilities in risk management work. In addition, through weekly Basel newsletters as well as Basel magazine, all employees of the bank can understand the principles, practices on risk management risks managed and identified through the system monitoring indicators in daily business results of employees. MB is also gradually improving the risk management capability of subsidiaries and subsidiaries are pioneers in applying risk management standards in the field where companies are operating.

### 2.3.2 Measurement of liquidity risk

According to the theoretical basis presented in Chapter 1, there are many methods of liquidity risk measurement, banks can choose liquidity management strategies and methods in accordance with the characteristics of their banks. Based on the data collected from the SBV, MB Bank, Stock Exchange from Annual Reports, Financial Statements, business performance analysis, researches, etc. In the period of 2014-2017, the author selected the liquidity index analysis method. This method is characterized by simple, less expensive, easy to access data, highly feasible, easy to compare and analyze to determine the ability to meet liquidity needs, from which to assess the liquidity risk management ability at MB Bank in the period of 2014-2017.

#### *2.3.2.1 Capital Adequacy Ratio – CAR*

The capital adequacy ratio is a measure of capital adequacy. At the same time, this target also has a close relationship with the liquidity of the bank. If the larger the bank maintains its capital adequacy ratio, the higher the liquidity is.

**Table 2.6: Capital adequacy ratio of MB in 2014-2017**

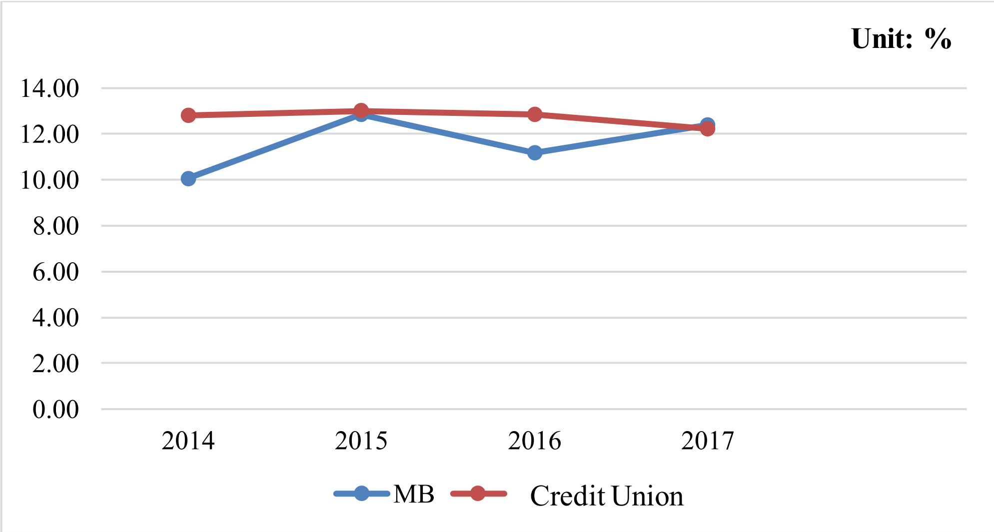
*(Source: Annual Report of the State Bank, MB's financial statements, 2014-2017)*

| Target | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| CAR | 10.07 | 12.85 | 12.50 | 12 |

In the period of 2014-2017, the capital adequacy ratio of MB had an uneven growth, but all remained lower than the whole system of credit institutions and above the adequacy threshold under Circular No. 36/2014/TT-NHNN dated November 20$^{th}$ 2014, of the State Bank of Vietnam regulating the capital adequacy ratio for banks, foreign bank branches, and Basel II standards.

**Figure 2.13. The capital adequacy ratio of MB and credit union system**

*(Source: Compiled by the author)*




In 2014, MB has complied with the State Bank's regulations on the capital adequacy ratio with a capital adequacy ratio of 10.07% compared to the required level of 9%; the ratio of short-term capital used for medium and long-term loans is only 19.03%; Good liquidity. This shows the stability and sustainability of MB operations. In 2015, along with ACB and Techcombank, MB Bank did not worry about CAR when raised its charter capital from 11,593 billion Vietnam Dong to 16,000 billion Vietnam Dong, increased by 38% compared to 2014.

By the end of 2015, the bank's CAR was 12.85%.

In 2016, MB was among the first 10 commercial banks selected by the State Bank to implement Basel II pilot in Vietnam. With the increase of charter capital to 17,127 billion Vietnam Dong, the increase in equity has increased but the growth rate has been slower than the growth rate of risk, leading to a capital adequacy ratio of only 12.50%, a slight decrease compared to 2015. However, this ratio is still in the safe level as prescribed by the SBV, helping MB to cope with the shock from abnormal fluctuations of the business environment.

In 2017, MB's management board announced the capital adequacy ratio of 12%, lower than 12.5% in 2016 but higher than the smallest of 9% according to Circular No. 36/2014/TT-NHNN, MB sold 3,000 billion Vietnam Dong worth of bonds to raise the level 2 capital in 2017 for corporations, organizations and pay dividends for 2017 to raise capital. In 2017, MB also completed the increase of charter capital from 17,127 billion Vietnam Dong to 18,155 billion Vietnam Dong.

The increase in capital is considered an urgent task of the banking industry because if it does not increase capital, banks will face up many difficulties in credit growth in the coming years when the CAR decreases. Circular 41/2016/TT-NHNN takes effect from January 01$^{st}$ 2020.

In general, MB is in the process of approaching the Basel II standard, so MB's charter capital increase from 11,594 billion Vietnam Dong in 2014 to 18,155 billion Vietnam Dong in 2017 is quite good, in the strategy of increasing equity and reduction of TSC to enhance liquidity risk management. The improvement of equity has a very important meaning in the current conditions of Vietnam because it contributes to strengthen people's trust in the banking system, minimize the risk of lack of available capital, improve the strong competitiveness in the lending market, and create a competitive advantage for the bank.

#### *2.3.2.2 Index of capital mobilization limit*

Banking business always has hidden a lot of risks. These risks will cause great damage to the bank, even leading to bankruptcy. Each bank needs to have sufficient funds to bear the risk in any situation. Compliance with the regulations on the charter capital conditions is not necessarily safe, but the problem is that this using related to assets with how the risk is.

**Table 2.7: Proportion of capital mobilization limit of MB, 2014-2017**

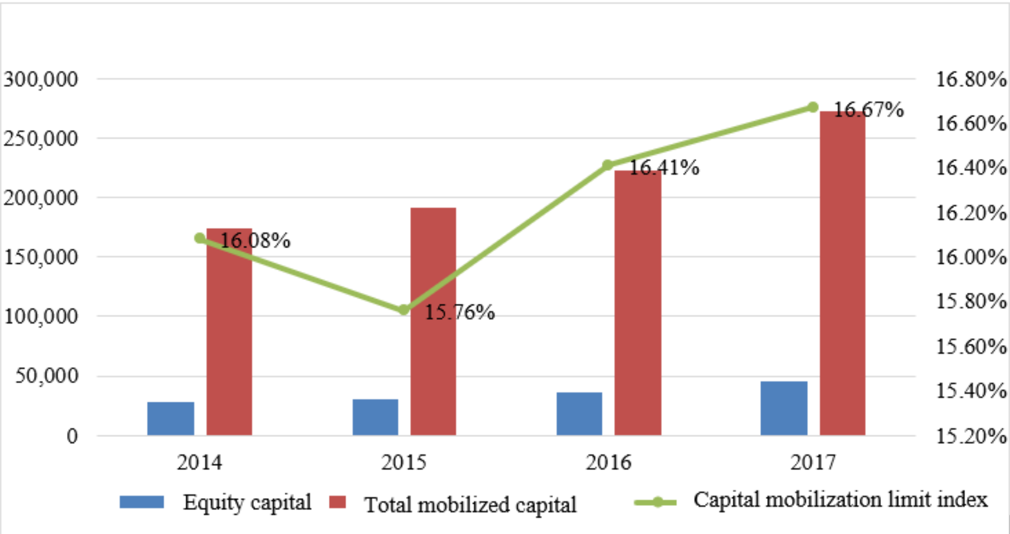
*(Source: The author's calculation on MB's financial statement data)*

| Target | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Equity capital (billion) | 28,051 | 30,238 | 36,476 | 45,455 |
| Total mobilized capital (billion VND) | 174,438 | 191,842 | 222,150 | 272,596 |
| Capital mobilization limit index (%) | 16.08 | 15.76 | 16.41 | 16.67 |

Stemming from the need to assess the level of liquidity risk related to equity, the capital mobilization limit index is analyzed to limit the level of capital mobilization to avoid excessive mobilization beyond the protection level of equity, leading to the risk of insolvency. In the period of 2014 - 2017, MB maintained a steady growth rate between its own capital and total mobilized capital, the index of capital mobilization limit of MB in this period was relatively stable, fluctuating with small margin in the range of 15% - 16%, but still much higher than the prescribed minimum level of 5% .

**Figure 2.14: Capital mobilization limit of MB in the period of 2014-2017**

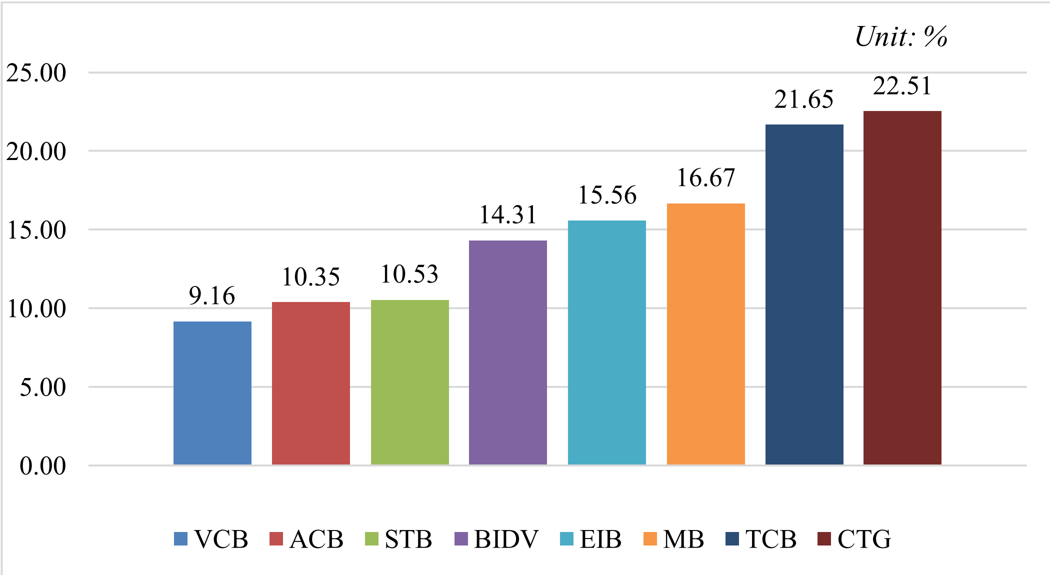
*(Source: MB's financial statement data)*




The nature of mobilized capital is the asset belonging to different owners, the bank only has the right to use without ownership and is responsible for repaying both principal and interest on maturity or when the customer has demanded of capital withdrawal. Therefore, maintaining the limit of capital mobilization index at the above level will help MB always ensure its ability to pay customers when customers need to withdraw capital unexpectedly and ensure liquidity.

**Figure 2.15: MB's capital mobilization limit compared to other banks in 2017**

*(Source: Financial statement data from VCB, ACB, STB, BIDV, EIB, TCB, CTG)*




According to Figure 2.15, it can be divided into 3 groups of capital mobilization as follows:

a) Group 1: including VCB, ACB, STB which is banks with relatively low capital mobilization index (5% - 10%), hidden the high risk of liquidity;

b) Group 2: including TCB, CTG which are banks with relatively high capital mobilization index (> 20%), maintaining such a high rate is not necessarily effective, the equity has increased rapidly while the mobilization of capital from customers is difficult, leading to the failure to meet the demand for loans and difficulties in investing in upgrading the technology platform, expanding the network, when equity capital is required for lending, thereby setting the urgent problem is that to allocate capital accordingly to ensure affordability and ensure the development and consolidation of the system.

c) Group 3: BIDV, EIB, MB are banking groups having the most effective capital mobilization strategy with relatively reasonable capital mobilization index, balancing the ability to pay and lending.

### *2.3.2.3 Index of equity capital on total assets*

Similar to the capital mobilization limit index, in the period of 2014 - 2017, MB has maintained a steady growth rate between equity and total assets. The equity ratio of MB's total assets in this period was quite stable, only fluctuating with a small margin of about 13-14%, tending to increase gradually and still at a much higher level than the regulated minimum level of SBV is 5 %.

**Table 2.8: Equity index on total assets of MB, 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

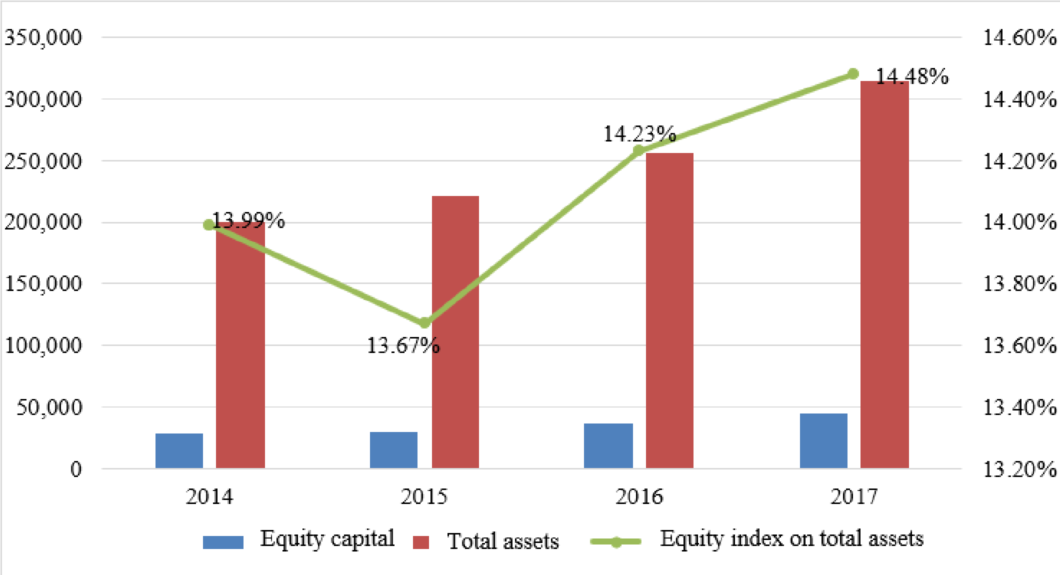
*Unit: billion, %*

| Target | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Equity capital (billion) | 28,051 | 30,238 | 36,476 | 45,455 |
| Total assets (billion VND) | 200,489 | 221,042 | 256,259 | 313,878 |
| Equity index on total assets (%) | 13.99 | 13.67 | 14.23 | 14.48 |

In the banking business, when risks appear, the bigger the decline in assets is, the lower the revenue is. Therefore, keeping a stable ratio between equity and total assets above (Table 2.8) will help MB to control its assets well, and these assets will only decline in the safe range allowed with equity capital. In other words, MB's equity is maintained at an appropriate rate allowing the Bank to respond promptly when liquidity risk occurs.

**Figure 2.16: The situation of equity capital above total assets of MB 2014-2017**

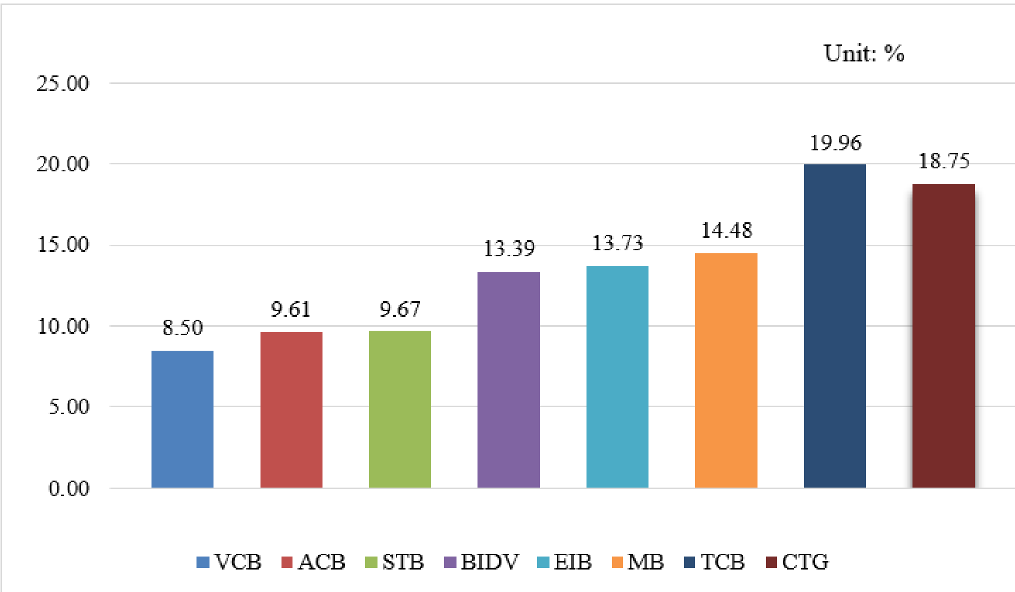
*(Source: MB's Financial statement data 2014 - 2017)*




Compared to other competitive banks in 2017, MB Bank maintained a reasonable equity structure with a not too high nor too low rate between equity and total assets, appropriate asset growth compared with the growth of equity, both contributing to ensuring business performance and ensuring capital safety to respond to liquidity risk.

**Figure 2.17: The ratio of equity capital above MB's total assets compared to banks in 2017**

*(Source: Financial statement data 2017 from VCB, ACB, STB, BIDV, EIB, MB, TCB, CTG)*



The index of capital mobilization and equity ratios above the total assets shows the two extremes, a bank group has two relatively high indexes, while a bank group has two relatively low indexes. While banks with low indexes are always in danger of falling into a state of loss of liquidity when risks occur. However, the bank group with a high index is not necessarily good, in terms of revenue. In addition, it is possible that these banks face up difficulties in raising capital, so the ratio of equity above total assets is high.

Since the equity index on total assets is limited: it does not take into account the different risks among types of assets and does not take into account the risks of off-asset assets. Therefore, in measuring liquidity risk of MB Bank, in the period of 2014-2017, it is necessary to use other indicators to reflect more fully on liquidity.

#### *2.3.2.4 Cash status indicators*

Cash and deposits at credit unions are one of the important factors to ensure bank liquidity. The cash status index indicates the Bank's ability to instantaneously liquidate at any time when customers need to withdraw cash. The customers' demand for withdrawing money today is extremely diverse through the rapid development of information technology and products and services of the Bank, no longer requires customers to go directly to the Bank within regulated time slots for making withdrawals. This requires that MB Bank needs to identify the average cash demand of customers, as well as combine with seasonal, cyclical or trendy fluctuations of customers to bring out the reasonable funding capital rate without affecting the profitability of assets.

**Table 2.9: MB's cash status index for the period of 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

Unit: Billion, %

| Target | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Cash (billion VND) | 1,233 | 1,236 | 1,520 | 1,842 |
| Deposits at credit unions (billion VND) | 11,104 | 17,785 | 12,885 | 38,765 |
| Total assets (billion VND) | 200,489 | 221,042 | 256,259 | 313,878 |
| Cash status index (%) | 6.15 | 8.61 | 5.62 | 12,93 |

MB's cash policy in the period of 2014-2017 has changed significantly compared to the previous period. Specifically, in the period of 2009-2011, MB maintained a large amount of deposits at other credit unions, often providing capital to the interbank market. The cash status index in this period is always maintained at approximately 30% of total assets. This shows that MB is able to meet a variety of cash needs. However, maintaining the cash position which is much higher than the average level in the period of 2009-2011 is not necessarily a positive thing, especially in the context of regional and world economic integration, banks only should maintain this rate at 2% - 3% according to international standards. In the period of 2014-2017, MB's cash status index tended to decrease, by moving to other forms of profitability, seeking investment sources and converting the amount of cash into other more profitable activities to both enhance revenue and reduce the proportion of cash.

Table 2.9 shows that MB's cash position in the period of 2014-2017 has plummeted to an average of 8.32% due to the expansion of credit activities as well as changes in business strategy by diversifying forms in the conditions of business operation. The bank is increasingly facing difficulties due to the fierce competition of competitors in the market and the conditions set by the State Bank to ensure the safety of the operation of the bank system. Activities of business, development, and investment continued to make the total assets of MB up to 313,878 billion Vietnam Dong in 2017. In which, lending activities had a high growth rate, total outstanding loans of the whole system increased by 1.8 times, from 108,859 billion Vietnam Dong in 2014 to 196.990 billion Vietnam Dong in 2017, this helps MB always belong to a group of joint stock commercial banks with high credit growth rate (over 20%), much higher than the overall growth rate of the whole system ( from 17% to 18%).

**Figure 2.18: Cash situation evolutions of MB in the period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

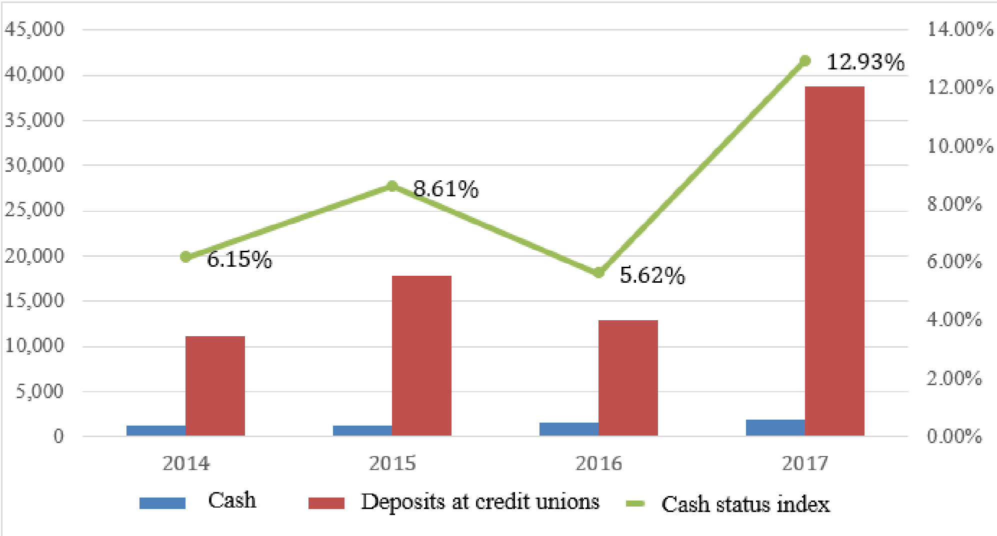



**Table 2.10: Cash growth rate of MB in the period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

| Item | Absolute number (billion VND) | | | | Growth rate (%) | | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2015 | 2016 | 2017 | 2015/2014 | 2016/2015 | 2017/2016 |
| Cash | 1,233 | 1,236 | 1,520 | 1,842 | 100 | 123 | 121 |
| Deposits at credit institutions | 11,104 | 17,785 | 12,885 | 38,765 | 160 | 72 | 301 |
| Total assets | 200,489 | 221,042 | 256,259 | 313,878 | 110 | 116 | 122 |

Figure 2.18 and Table 2.10 show that the cash status index in 2017 increased 2.3 times compared to 2016, while the amount of cash is maintained relatively stable, there is no big change, the growth rate of assets is not high. The reason is that MB changed its deposit policy at credit institutions, thus, the amount of deposits at other credit institutions increased from 12,885 billion Vietnam Dong in 2016 to 38,765 billion Vietnam Dong in 2017, the growth rate reached 301%. This is a positive change, a good sign in the liquidity risk management of MB because the cash balance is always maintained at a guaranteed level, ready to respond to instant liquidity situations. Specifically, when there is a shortage of liquidity, MB will be able to withdraw money from other banks to finance the arising liquidity needs.

In addition, the increase in deposits at other banks also generates more profit for MB than valuable papers and cash on hand. In this way, MB has ensured its liquidity management goal and ensured its profit target.

The cash status index at 12.93% is acceptable if considered in the context of the economic situation in 2017 and compared with the average of other competitive banks. This index at BIDV is 8.33%, at Vietinbank is 9.85% and at Vietcombank is 16.33 %.

#### *2.3.2.5 Index of liquidity securities*

In terms of development investment in the securities sector, MB Bank is one of the pioneering banks and has developed well in the past years. Back in 2008, Vietnam's economy was affected by two consecutive crises:

a) World fuel price, food prices, iron and steel prices crisis;

b) The real estate, subprime lending crisis in the US has accumulated more than a year ago that broke out in mid-September 2008 and has spread rapidly to the financial, monetary, economic and labor sectors, as well as spread quickly to regions and countries around the world.

Two big shocks brought Vietnam to face the risk of inflation and stagnation. It has been the worst year of Vietnam stock market since the opening of the monetary market, the liquidity of the market has weakened and there has been a dissolution and merger between securities companies due to unbearable market slump. In that context, most banks hold stocks at low rates, especially some banks do not even hold this type of asset because not only does it improve the liquidity status, but it also causes losses due to securities trading of banks. However, while most banks reduced their stock holding rate in 2008, such as: Eximbank from 16.88% to 2.63%; VIB from 17.16% to 13.87%; Vietcombank from 19.11% to 13.76%, while MB has paid much attention to the secondary market to improve liquidity management efficiency by pioneering to increase stock holding ratio from 2.24 % up to 13.99% because of the expectation of the market growing again in the future and striven to improve the business situation.

**Table 2.11: MB’s liquidity index, period 2014-2017**

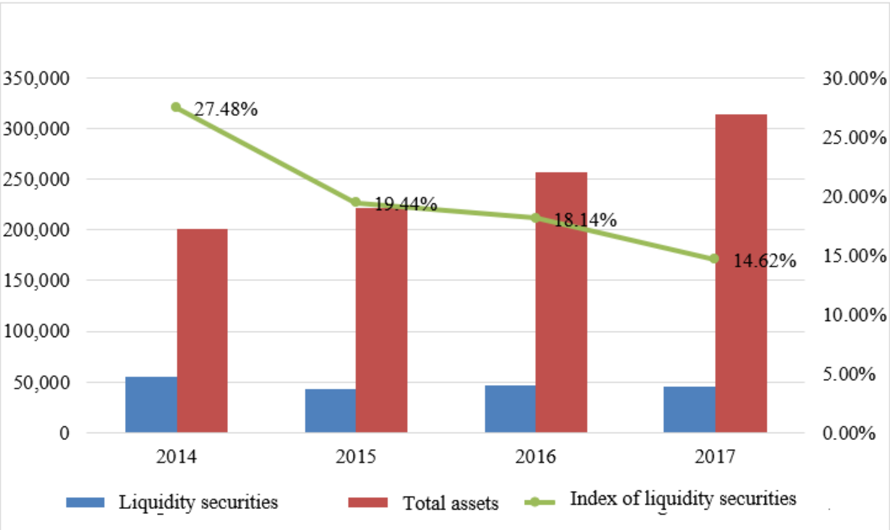
*(Source: MB’s Financial statement data 2014 - 2017)*

| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Liquidity securities (VND billion) | 55,104 | 42,982 | 47,152 | 45,897 |
| Total assets (billion VND) | 200,489 | 221,042 | 256,259 | 313,878 |
| Index of liquidity securities (%) | 27.48 | 19.44 | 18.14 | 14.62 |

Table 2.11 shows that, in 2014, MB's liquidity index increased quite a lot, at 27.48%. The reason is that the amount of debt securities issued by the Government of MB increased significantly while total assets kept growing stable. At the time of June 2014, when Vietnam stock market staggered due to investors' worries about tensions in the East Sea, MB received much attention and appreciation of domestic and foreign experts, leaving positive effects on MB in the market.

**Figure 2.19: MB's liquidity index for the period of 2014-2017**

*(Source: MB’s Financial statement data 2014 - 2017)*




About MB’s liquidity index for the period from 2014 to 2017, although the number of high liquidity securities remained unchanged, due to the strong development, MB's total assets increased 1.4 times, causing liquidity index to decrease gradually from 27.48% to 14.62% in 2017. This is in line with the actual situation when the stock market fluctuates, banks should not hold liquidity securities with a large proportion of total assets to minimize the risk. Instead, MB maintained a certain amount of securities to partially offset the liquidity problems. In addition, holding a high proportion of liquidity securities may affect investment in other highly profitable sectors. Therefore, the rate of 14.62% in 2017 is still quite high compared to international standards but is a relatively reasonable rate in terms of the domestic market and a part of the long-term liquidity strategy of the Bank that aims to support the ability to increase liquidity supply when needed.

#### *2.3.2.6 Lending ability index*

Lending ability index (Outstanding debt/Total assets) reflects the Bank's lending capacity. This index indicates that the bank's TSC portion is allocated to the least liquid assets, which are loans.

**Table 2.12: Loan growth rate of MB in the period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

| Item | Absolute number (billion VND) | | | | Growth rate (%) | | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2015 | 2016 | 2017 | 2015/2014 | 2016/2015 | 2017/2016 |
| Lending to credit institutions | 10,753 | 11,143 | 14,264 | 14,928 | 104 | 128 | 105 |
| Financial lending, leasing | 100,569 | 121,349 | 150,738 | 184,188 | 121 | 124 | 122 |
| Total assets | 200,489 | 221,042 | 256,259 | 313,878 | 110 | 116 | 122 |

**Table 2.13: MB's lending capacity index for the period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

*Unit: billion VND, %*

| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Lending to credit institutions (billion VND) | 10,753 | 11,143 | 14,264 | 14,928 |
| Financial lending, leasing (billion VND) | 100,569 | 121,349 | 150,738 | 184,188 |
| Total assets (billion VND) | 200,489 | 221,042 | 256,259 | 313,878 |
| Lending ability index (%) | 55.52 | 59.93 | 65.38 | 63.43 |

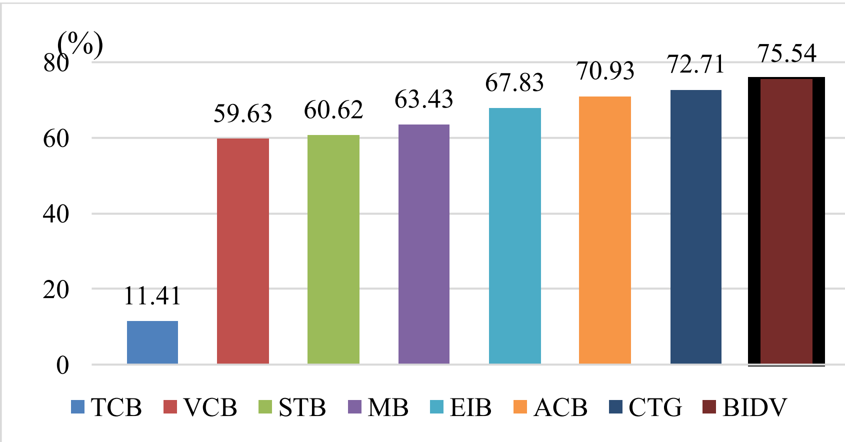
Table 2.13 shows that MB's lending capacity index increased from 55.52% in 2014 to 64.38% in 2016 but also shows signs of slowing down in 2017, at 63.43%. The reason is that:

a) Although the size of lending to credit institutions, customer financial lending and leasing have increased, but the scale has increased not equal to the total assets;

b) Growth rates of credit institutions lending, financial lending and leasing in 2017 decreased compared to 2016, notably the credit institutions lending growth in 2017 dropped to only 5%, while that in 2016 was 28%, while assets still maintain a steady growth rate (16% in 2016 and 22% in 2017) (Table 2.12).

**Figure 2.20: MB's lending capacity compared to other banks in 2017**

*(Source: Financial statement 2017 from VCB, ACB, STB, BIDV, EIB, MB, TCB, CTG)*




The main activities of Vietnamese commercial banks are still credit activities, the lending ability index is always above 50%, especially in banks with high competitiveness (except Techcombank). Considering the lending capacity of competing banks in 2017, MB is not among the highest (ranked 5/8) but still reaches the figure of 63.43%. However, because financial lending and leasing are considered the least liquid assets, the lending capacity index maintained by MB at over 50% to over 60% in recent years reflects this Bank is actively growing credit and financial leasing to seek profits. As evidenced by the end of 2017, MB was among the leading group in profitability in joint stock commercial banks without state capital. According to the separate financial statements, the bank's profit reached 5.355

billion Vietnam Dong, completing 124.5% of the plan, up 44.3% compared to 2016. This is the highest growth rate in recent years of MB.

Thus, potential interest rate risk is most likely to occur, leading to liquidity risk. Specifically, if the SBV establishes a tight monetary policy, like other banks, to ensure liquidity, MB must increase deposit interest rates while the interest rates are recorded in the signed credit contracts is constant, causing income to decline. Besides, in some time, MB has to use short-term capital to provide medium and long-term loans, creating a risk in term of mobilizing capital and using capital. Interest rate risk and forward risk will put great pressure on liquidity. Therefore, in the coming period, maintaining this index below 50% along with continuing to strictly comply with provisions on risk provisioning and good credit quality control will ensure liquidity activities of MB in a safer condition.

#### *2.3.2.7 Lending index on customer deposits*

In the period of 2014-2017, MB's lending index on deposit reached 78.5% on average and increased steadily over the years, from 66.41% in 2014 to 90.43% in 2017, outstanding debts and deposits are all growing but outstanding debt tends to increase faster (Table 2.14).

The bank's profit comes mainly from credit activities, so with the trend of maintaining this index at a high level and increasing steadily over the years, MB will often have to deal with liquidity risk if there is a fluctuation of interest rates. or changes in unforeseen customer demand.

**Table 2.14: Customer deposit Lending index of MB, period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

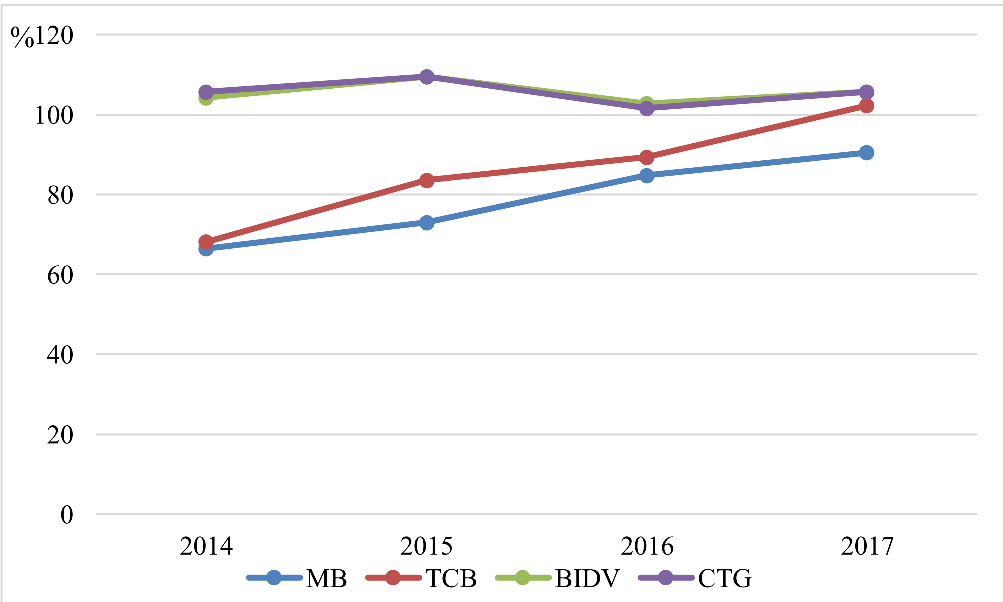
| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Lending (billion VND) | 111,322 | 132,492 | 165,002 | 199,116 |
| Customer deposits (billion VND) | 167,609 | 181,565 | 194,812 | 220,176 |
| Customer deposit Lending index (%) | 66.41 | 72.97 | 84.69 | 90.43 |

High lending over customer deposits index shows a lack of activeness in product development and other income sources of MB with the majority of customer deposits (more than 90%) for credit provision. How much this rate will increase, the liquidity of MB will decrease much. Although the lending index on customer deposits is not a perfect measure of liquidity, it is an approximate measure. When this index is high, it is a warning signal that motivates administrators to monitor the bank and re-evaluate the total amount of capital used.

Figure 2.17 shows that, in comparison with some large commercial banks, MB is the bank with the lowest lending index on customer deposits and the only bank with this index below 100%. Specifically: in 2017, this index of MB was 90.43%, of Techcombank was 102.21%, of BIDV was 105.61% and of Viettbank was 105.75%. Thus, in the banks, there is a lending index on deposits of over 100%, such as Techcombank, BIDV or Viettinbank, the entire customer deposits are used for lending, even exceeding the mobilization level, making banks goods are forced to borrow in the money market to ensure compulsory reserve ratios and liquidity (essentially borrowing on the market 2 and re-lending in the market 1). Thus, although credit activity is the activity that brings the main profit for the bank, but the rate is too high, it will put great pressure on liquidity ability when there is a risk.

**Figure 2.21: MB's customer deposit lending ability compared to some large banks in 2017**

*(Source: The author's summary through the 2017 financial statements of banks)*



With the deposit lending ratio in 2016 and 2017 exceeding 80% and 90% respectively, MB violated the ratio of outstanding loans to the maximum total deposit of 80% specified in Circular 36 / 2014/TT-NHNN of the SBV. If there is no timely control and reasonable credit policy, it is likely that this index will increase in the future. In order to overcome this situation, in the coming time, MB needs to diversify types of service products, additional investment sources other than credit to increase profitability and reduce liquidity pressure from credit activities.

#### *2.3.2.8 Deposit structure index*

To assess and measure MB's liquidity via the deposit structure index, the author only considers cash and demand deposits (DD) at credit institutions. These are highly liquid assets without taking into account term deposits (TD).

**Table 2.15: Deposit structure index of MB, period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Cash (billion VND) | 1,233 | 1,236 | 1,520 | 1,842 |
| Demand deposit at credit institutions (billion VND) | 3,097 | 6,793 | 3,752 | 17,759 |
| Customer deposits (billion VND) | 167,609 | 181,565 | 194,812 | 220,176 |
| Deposit structure index (%) | 2.58 | 4.42 | 2.70 | 8.90 |

Table 2.15 shows that, in the period 2014-2017, MB Bank only reserves cash and demand deposits at credit institutions less than 10% on customer deposits to ensure liquidity needs, even less than 5 %, in the period 2014-2016.

Particularly in 2017, the amount of demand deposits at other credit institutions of MB increased strongly by 373% compared to 2016, pushing the deposit structure index up from 2.70% to 8.90%. The reason is that MB's customer deposit outstanding debt is quite high, reaching more than 90% in 2017, MB has used most of the customers' deposits for credit activities (financial lending, leasing) and very little for reservation in high liquidity assets. This is consistent with the results analyzed in the lending capacity index and customer deposit lending index, consistent with the business results of the past years, in which the significant and breakthrough profit growth is a highlight. However, due to the deposit structure index showing the bank's ability to pay immediately when customers have demand for deposit withdrawal, the above results indicate that MB's ability to pay immediately is not good and potential with liquidity risk.

**Table 2.16: MB's demand deposit/term deposit ratio, 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Demand deposit (billion VND) | 37,836 | 56,825 | 66,185 | 71,367 |
| Term deposit (billion VND) | 100,405 | 110,119 | 131,283 | 163,943 |
| Demand deposit Term deposit Ratio (%) | 37.68 | 51.60 | 50.41 | 43.53 |

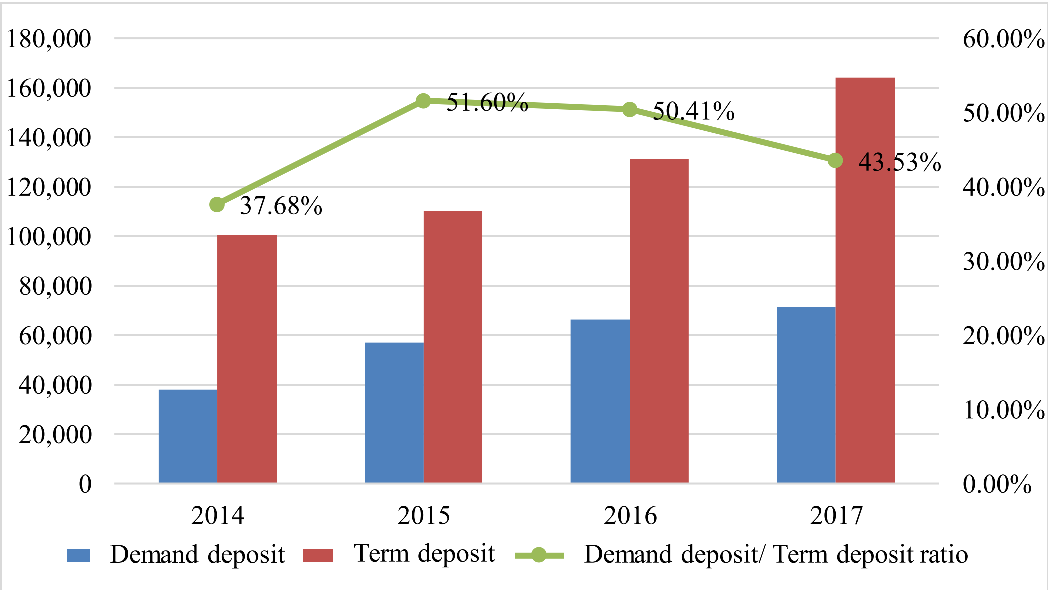
Considering the demand deposit over term deposit ratio of MB (Table 2.16 and Figure 2.18), this ratio tends to increase in 2014 and 2015 but decreases in the period of 2016-2017. Although there is an unstable growth trend, only average demand deposit over term deposit reaches 45%. This number has both positive meaning and negative meaning. Specifically:

a) Negatively expressed, the demand for liquidity is always high because a large amount of demand deposits will be withdrawn at any time and MB must always have solutions to prepare for that situation. If most of the bank's customers settle their demand deposits, or withdraw short-term deposits or even medium-term deposits or do not continue to deposit at maturity, MB may have to the capital with higher capital costs, such as borrowing money in market 2 to meet operational requirements. In that case, MB cannot guarantee that it can mobilize capital with reasonable commercial terms when needed. The ability to mobilize additional capital may be affected by factors beyond control, such as market downturn, serious fluctuations in the banking financial market or bad prospects of industries that banks issue credit with great value.

b) The positive news is that demand deposit accounts for a large proportion, which brings a higher income for MB since demand deposit interest rates are always much smaller than term deposits. Besides, term deposit of the bank tends to increase over the years, that of the following year is higher than that of the previous year. This also contributes to affirm customers' beliefs and appropriate banking policies.

**Figure 2.22: Demand deposits over Term deposits ratio, period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*




Therefore, MB needs to study, balance to create and maintain this ratio at an appropriate level to ensure liquidity and at the same time profitability for business operations in the coming time.

### *2.3.2.9 Net status indicator for credit institutions*

**Table 2.17: Net status index for credit institutions of MB, period 2014-2017**

*(Source: MB's Financial statement data 2014 - 2017)*

| Item | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Deposits and loans to credit institutions (billion VND) | 21,415 | 28,659 | 26,953 | 53,493 |
| Deposits and borrowings from credit institutions (billion VND) | 4,604 | 7,509 | 24,713 | 46,101 |
| Net status indicator for credit institutions (%) | 465.13 | 381.66 | 109.06 | 116.04 |

Table 2.17 shows that MB's lending is more than borrowings. From 2014 - 2017, MB's liquidity for credit institutions is always positive. In 2014 alone, deposits and loans to credit institutions were 4.65 times higher than deposits and loans of credit institutions, this figure in 2015 was 3.81, reflecting the very good liquidity of MB in 2014 and 2015. Liquidity tends to decline sharply until 2016 and slightly increases again in 2017.

**Table 2.18: The net status index for MB's credit institutions compared to other banks, 2013-2017**

*(Source: The author's summary through the 2017 financial statements of banks)*

*Unit: %*

| Bank | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|
| BIDV | 103 | 59 | 84 | 67 | 129 |
| Viettinbank | 91 | 73 | 67 | 111 | 93 |
| Vietcombank | 210 | 340 | 182 | 210 | 348 |
| Sacombank | 168 | 110 | 75 | 31 | 58 |
| MB | 124 | 465 | 382 | 109 | 116 |
| ACB | 103 | 93 | 416 | 364 | 58 |
| Techcombank | 102 | 97 | 71 | 87 | 65 |
| Eximbank | 88 | 96 | 99 | 128 | 135 |

According to Table 2.18 on the basis of high competitiveness, the Bank's net position in market 2, can be divided into 3 groups as follows:

a) Bank group that has shifted from the borrower to the lender in market 2, including Eximbank and BIDV. Meanwhile, in the opposite direction, there are Sacombank and ACB, especially ACB with the fastest and strongest change from 364% in 2016 to 58% in 2017;

b) Bank group that specializes in borrowing from market 2 such as Sacombank and Techcombank. This shows that the credit expansion of these banks is too high compared to the growth of mobilized capital. However, this also shows that the market access ability of these banks is very large;

c) The third group includes banks specializing in lending on market 2 such as Vietcombank, MB. This is a strategy to maintain good liquidity position to prevent liquidity risk from the strong growth of credit activities. Back in 2008, when banks lacked serious liquidity, Vietcombank and MB were two of the "giants" in the secondary market and lent at very high-interest rates.

For MB Bank, with net status of 109% in 2016 and 116% in 2017, it is shown that in the coming period, that the study and adjustment to increase the proportion of deposits and loans to credit institutions or reduce the proportion of deposits and borrowings of credit institutions to gain good liquidity position again and build a strong foundation to be ready to respond to liquidity risk is always permanent in the context of constant competition among commercial banks is necessary.

### 2.3.3 Liquidity risk control and prevention

In recent years, at MB, risk management framework has always been prioritized to ensure comprehensive management of key risks in banking operations, including liquidity risk in accordance with the State Bank, international practices, as well as the recommendation of the Basel Committee. This is reflected in the fact that MB Bank has developed the risk management framework to guide, organize and implement business activities in accordance with the strategic orientation and business objectives from time to time, including risk appetite; credit policy oriented to specific target segments/customers every year; active risk management policies; market risk management policies / liquidity risk / interest rate risk in bank books; risk limits that MB accepts; etc.

In addition, measurement models/tools for different types of risks have been developed by MB in the previous period, such as: VaR - Risk tolerance, liquidity gap, revaluation gap; LDC loss data collection tool; self-assessment of risks and measures to control RCSA; The main risk index KRI continues to be strongly applied by MB in making business and governance decisions, ensuring that decisions are carefully considered on the basis of income - risk balance.

MB Bank also focuses on applying strong modern technology to risk management activities. The highlight of the application of QTRR software is its high connectivity to business needs, ensuring a software that serves a variety of banking needs. At the same time, MB has actively built and introduced risk calculation software based on Basel II, providing a basis for evaluating the efficiency of capital use and making decisions on capital allocation, effectively supporting risk monitoring at MB, helping to strengthen the enforcement effect of the policy framework that has been built and also creating supportive values for business development.

#### *2.3.3.1 Principles of liquidity management at Military Bank*

Strictly abide by the State Bank's regulations on capital and liquidity safety in business operations of banks, liquidity limits prescribed in liquidity risk management policy of ALCO Committee;

a) Maintain a minimum ratio of 25% between the value of Assets available, payable immediately and liabilities will be due within the next 1 month; maintain a minimum ratio of 1 between total payable Assets within the next 7 working days.

b) Summarize, analyze the dynamics of depositors, develop a reasonable capital use plan for credit operations and activities with capital risk.

In addition, MB also developed liquidity norms as a backup tool to promptly handle liquidity cases. Based on the ability to pay immediately and the ability to convert into instant payments, the liquidity ratio is divided into four levels, from low to high, each level clearly defines the types of liquidity. MB develops backup liquidity plans in writing and submits them to the ALCO Committee for consideration and monthly updates. In addition, there are emergency response plans to provide leaders, units, departments and staff with ways to manage and respond to liquidity incidents. The emergency response process consists of major steps that are closely related, namely:

*Step 1*: Develop a plan to define incident classification, simulate the situation of incidents and specific actions to respond to. The plan must be in writing, set up on a daily basis, even after working hours. The plan must be reviewed at least every 6 months.

*Step 2*: Perform a systematic response.

*Step 3*: Control the emergency management mode, manage every action during the incident, adjust the plan to suit the situation.

#### *2.3.3.2 Requirements of emergency response plan*

a) Must specify the urgency levels of liquidity and preventive measures, usable liquidity quotas, mobilizable resources including internal resources and external resources;

b) A multi-dimensional communication plan from staff to leadership must be provided, from the inside out, the communication facilities and the level of maintenance Requirements of emergency response plan MB have been received technical assistance of foreign shareholders on risk management, including improving management on liquidity risk. The application of modern risk management techniques will help MB improve the management of liquidity more effectively, contributing to increasing the benefits for banks.

#### *2.3.3.3 Process of liquidity management at Military Bank*

a) The daily liquidity management process includes the following steps:

*Step 1*: At the beginning of the week, ALCO support department made a report on liquidity supply and demand on the first day of the week, set up liquidity indicators and assess the liquidity situation in the week. Then they consider determining the excess or lack of liquidity, send the report to the board of directors, ALCO committee and trading department.

*Step 2*: At the beginning of the day, the back office support department printed reports on due cash flow, the liquidity index, the Nostro account balance, the balance of valuable papers eligible for trading and send them to the trading department.

*Step 3*: Based on the input information (reports of the transaction support department, reports of ALCO support department), the transaction and inspection department will always ensure full compulsory reserve implementation and ensure payment safety ratios regulated by the SBV.

*Step 4*: Decide transactions to ensure liquidity management objectives.

*Step 5*: The trading department regularly checks and collects Nostro account balances of each currency to ensure the balance of the currencies is not negative.

b) Periodic liquidity management process: To forecast supply and demand liquidity for a future periodic period of time (usually Month, Quarter), MB makes statistics and forecast according to these steps:

*Step 1*: Transaction department, department of capital, credit, economic information at the Head Office set up reports evaluating and predicting interest rates, inflation, economic growth, capital mobilization, and credit disbursement plans; Market and operational risk management department captures market information, makes a report to predict changes in interest rates, exchange rates and trends of the economy in order to provide information about the liquidity situation for the ALCO support department;

*Step 2*: LCO support department based on the information reported by professional departments to make a report on liquidity index and report on supply and demand of liquidity, and send to the risk management department to handle;

*Step 3*: Market risk management department and ALCO support department will analyze liquidity risk according to different scenarios and measure liquidity indicators;

*Step 4*: ALCO support department cooperates with the risk management department to propose liquidity limits and measures to reduce liquidity to reach the target.

*Step 5*: In the regular meeting, the ALCO committee makes decisions on limits and measures to reduce liquidity risk.

*Step 6*: The trading department manages ALCO’s daily liquidity according to ALCO's authorization to ensure compliance with the limits of ALCO's decision, while ALCO’s support department monitors the daily liquidity situation as authorized by ALCO's.

#### *2.3.3.4 Handling of liquidity status at Military Bank*

Over the past years, MB has been actively researching and developing many methods to deal with liquidity status in the most effective way. In particular, MB has established limits and levels of liquidity shortage in response to liquidity shortages, namely the limit of cumulative liquidity gap / total assets, shown by the following table:

**Table 2.19: Table to monitor the liquidity limits at MB**

*(Source: The author’s summary)*

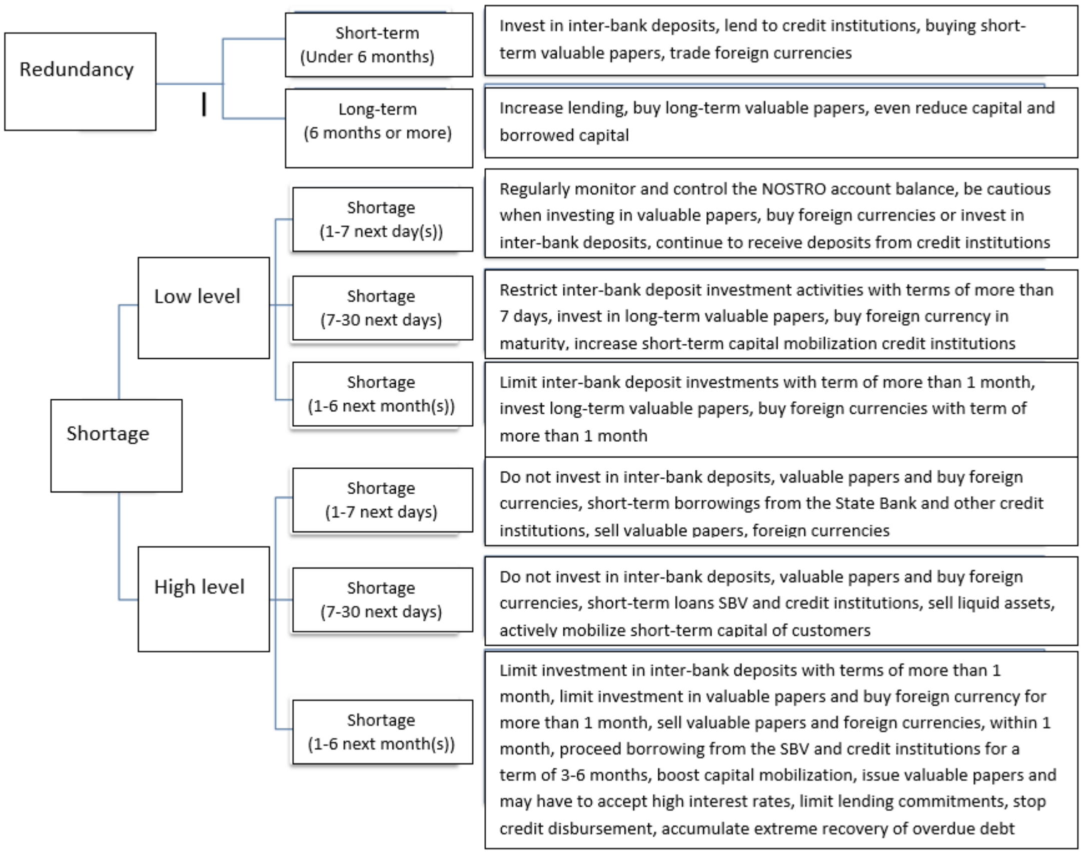
| Item | Liquidity not in shortage | Shortage in low level | Shortage in high level |
|---|---|---|---|
| The ratio of cumulative liquidity gap the next one day/total assets | > 0% | From -1% to 0% | < -1% |
| The ratio of cumulative liquidity gap the next seven days/total assets | > -1% | From -2% to 1% | < -2% |
| The ratio of cumulative liquidity gap the next month/total assets | > -3% | From -5% to -% | < -5% |
| The ratio of cumulative liquidity gap the next three months/total assets | > -5% | From -7% to -% | < -7% |
| The ratio of cumulative liquidity gap the next six months/total assets | > -7% | From -10% to -7% | < -10% |

MB's handling of excess and liquidity shortage is regulated clearly, for example: in the shortage of liquidity with a term of 1-6 months, MB will deal with a series of measures, such as: limiting investment in inter-bank deposits for terms of more than 1 month; restricting investment in valuable papers and buying foreign currency for more than 1 month; selling valuable papers and foreign currency; within 1 month, borrowing from SBV and credit institutions for a term of 3-6 months; promoting capital mobilization; issuing valuable papers and can accept high-interest rates; limiting loan commitments; stopping disbursing credit;

actively collecting overdue debt (Figure 2.23). Do not invest in inter-bank deposits, valuable papers and buy foreign currencies, short-term loans SBV and credit institutions, sell liquid assets, actively mobilize short-term the capital of customers.

**Figure 2.23: Handling of liquidity status at MB**

*(Source: The author's summary)*



## 2.4 Assessment of liquidity risk management activities of the Military Bank

The results will be summarized to show the existing limitations and the cause of them.

### 2.4.1 Results

*(1) Regarding management organization, control, and prevention of liquidity risk*

MB Bank has a clear awareness of the role, as well as the risk of liquidity risk in the banking business, as understanding that banks may suffer unpredictable losses both economically and economically in the situation of massive customer withdrawals. However, in fact, MB does not have a specialized division of monitoring and risk management, the organization of risk management is attached to the general risk management organization, but basically, this organization still ensures a good role of risk management for MB in the period 2014-2017. Specifically: right from the strategic phase of 2011 - 2015 and continuing in the strategic phase of 2017 - 2021, outstanding risk management is defined as 1 of 2 platforms to implement the strategy at MB. Accordingly, Basel II has been studied early by MB (2012) and applied by MB in risk management. The application of the Basel Committee recommendations is in accordance with the trend, as well as the roadmap set by the State Bank, has important implications in improving internal management capability, protecting growth achievements, and sustainable profits.

MB's strategy in the period of 2017-2021 offers the motto "Breakthrough growth, Efficiency - Safety", based on 3 pillars: community banks, professional banks by branches and digital banks; and 2 platforms: superior risk management and fast execution capability. With the new strategic orientation, MB has implemented many solutions to improve risk management capability with the goal of accompanying business, meeting the trend of the financial market as well as the Basel II compliance requirements of the State Bank. Risk management controls comprehensively and effectively all types of risks across the group, actively contributes to the overall results of the whole bank, fulfills business targets, manages the quality of the portfolio well, safety limit control of regulatory compliance. This shows that risk management activities in general and liquidity risk management, in particular, are seriously concerned by MB and shown in some results as follows:

***Firstly***, on the organizational model: organization of risk management apparatus has gradually been formed, adjusted and improved to improve the quality of governance. From the scattered and semi-intensive risk management model, according to each independent branch with the information system serving for undeveloped risk prevention work, MB has gradually moved to a completely new model of centralized capital management at the Head Office with very detailed regulations for each Department / Function to create general consistency and equality for branches; allocate costs and capital income objectively between branches contributing to assess the level of contribution of branches to promote creativeness and activeness with strengths in each area; balance the most effective way of using capital targets and business plans, ensure the prescribed safety limits, achieve the bank's best financial targets and advantages in risk management.

Next, MB has applied the model of 3 protection rings to the bank's management activities to ensure a clear separation of functions and tasks of units, avoiding overlapping and increasing the awareness of the responsibility of the entire bank in identifying, evaluating, monitoring and controlling risks. This model is clearly demonstrated through the effective, regular and continuous establishment and operation of monitoring mechanisms of committees, specialized committees of the Board of Directors and the Executive Board of Risk Management Committee, ALCO Committee. , Steering Committee to handle technology risks. The establishment of the ALCO Committee is also one of the important factors to strengthen liquidity management as well as setting new requirements for liquidity management to guide this activity according to international practice.

At the same time, MB also organized the management of vertical operations from the Head Office down to the branches. The potential risk phase of interest conflicts such as sales, appraisal, approval and credit support is carried out by independent units, ensure objectivity and transparency. The functions of system management feature such as credit appraisal, approval and credit support; accounting - finance, human resources, and information technology are centralized at the Head Office. Specialized branches perform business functions within the framework of policies and regulations established by the Head Office and are subject to the supervision of the Head Office.

***Secondly***, in terms of risk management, liquidity risk management has gradually improved: MB has implemented Basel II since before the State Bank officially issued Circular No. 41. In 2012, MB hired Deloitte consultant to develop Risk Management Framework. Activities include strategy, policy, operational risk appetite and the process of implementing

03 operational risk tools which are LDC, RCSA, and KRI. By 2014, MB cooperated with Ernst & Young Singapore to carry out the project of analyzing distance and developing Basel II implementation roadmap. This roadmap, in addition to complying with the State Bank's roadmap, also identified 25 MB components that need to be proactively implemented in the management and business activities. Up to now, MB has completed 14 components, put into operation; and continue to implement 11 components from now to 2020 (models of credit risk quantification of PD, LGD, EAD; capital and liquidity stamina test; continuous business management framework, etc. )

Risk measurement models/tools, risk management software/applications developed by MB in the Basel II framework are closely linked to creating values for the bank's business operations. The credit ranking system by a statistical method (and eventually PD, LGD, EAD models) in addition to measuring credit risk level, also supports effectively for credit evaluation and approval of banks, shortening service delivery time to customers. The VaR, ΔNII, EVE models, customer behavioral analysis tools developed by MB themselves are strongly applied in the safe management of business activities of capital and currency, as well as contribute to restructuring the bank's balance sheet in the direction of increasing efficiency. With these tools, risks are identified and communicated to deciders quickly, limiting disadvantages and creating business advantages.

***Thirdly***, regarding the culture of risk management culture, liquidity risk management with the high awareness of responsibility is widely perceived in the whole bank, by all staff (not only specialized risk management agency at the Head Office). MB has the support and commitment of investment and attention on risk management from the Board of Directors and the Executive Board as well as the coordination among units in the bank through boards and committees of the Board of Directors and the Executive Board. MB has also issued the risk appetite and policies, regulations and key risk management procedures to ensure that all units understand their responsibilities in risk management. Besides, through weekly Basel newsletters as well as Basel magazine, all employees can understand the principles, practices on risk management, risks managed and identified through the system of monitoring indicators in daily business results of employees. MB is also gradually improving the risk management capability of its subsidiaries, and subsidiaries who are pioneers in applying risk management standards in the field in which companies are operating.

***Fourthly***, MB always complies with international laws and practices in risk management. Because the risks in banking business are always complicated, one of the reasons is that the services are diversified and the scope of operation is wide, so the compliance with the law is always a compulsory requirement for all commercial banks. Although there is no separate department specializing in monitoring and managing liquidity risk management, over the past years, the organization and implementation of documents on safety assurance in business activities according to the regulations of the State Bank are relatively clear, more or less bring efficiency in the risk management activities of the bank, and help MB to resist success with very negative impacts from the global financial crisis and the European public debt crisis recently brought to Bank. Supporting success is not only reflected in the fact that although there are many difficult stages in the banking system to deal with liquidity problems, it is not required to seek assistance from the State Bank, but also expressed in that the bank has handled liquidity requirements arising at reasonable costs, thereby, MB's reputation and brand are still maintained and promoted in domestic and foreign financial markets.

*(2) Regarding liquidity risk management through liquidity indicators*

In business activities, there is always a trade-off between profit and risk. The greater the risk is, the higher the profit is. However, the reality of banking business at MB, in the period of 2014-2017 shows that MB is not only in the group of commercial banks with rapid growth but also is a bank with a sustainable development strategy, ensuring profitability, limiting and controlling risks to a minimum level. MB has always been evaluated as one of the strongest banks in risk management and safe operation, good compliance for many past years. Therefore, MB's position is increasingly affirmed, prestige is constantly improved.

**Table 2.20: Summary of liquidity indexes evaluation of MB**

*(Source: The author's synthesis)*

| No. | Index / Criteria | Limited value | Achieved value | Evaluation | Pursuant reference of Limit Value |
|---|---|---|---|---|---|
| 1 | Capital adequacy ratio (CAR) | ≥ 9% | 12% | Safe | Circular No. 36/2014 / TT-NHNN (Potential risks when CAR declines due to the new calculation method according to Circular No. 41 that takes effect from 01/01/2020) |
| 2 | Capital mobilization limit | ≥ 5% | 16.67% | Safe | According to the State Bank's regulations, total mobilized capital must be ≤ 20 times of equity |
| 3 | Own capital on total assets | ≥ 5% | 14.48% | Safe | According to the general standards of the State Bank |
| 4 | Cash status | ≥ 2-3% | 12.93% | Safe | Basel (2000), Best practices for liquidity management capability of banks |
| 5 | Liquid securities | ≥ 4% | 14.62% | Safe | Basel (2000), Best practices for liquidity management capability of banks |

*a) Regarding the safe index group*: In general, the liquidity situation of MB is at a safe level, most of the rates comply with the regulations of the State Bank (Table 2.20). After 2 years of committing to comply with Basel II, in 2017 and early 2018, the business practice has continued to reflect better and better performance with MB. The bank has gone into depth to increase its position through indexes reflecting quality, effectiveness, and safety:

- Equity index on total assets and capital adequacy ratio (CAR): The average of equity on total assets in the period 2014-2017 averaged 14%, much higher than the maximum regulation of the SB is 5%, which is a reasonable rate, the appropriate asset growth compared to the growth of equity, and contributes to ensuring business performance and capital adequacy to cope with liquidity risk. Capital adequacy ratio CAR is above 12% - based on Basel II, over 9%; MB is one of the banks with the best asset quality today.

- Capital mobilization limit index: MB not only complies with capital mobilization limit set at least 5% but also holds in the bank group with the most effective capital mobilization strategy with relatively reasonable capital mobilization limit index (15% -17%), and balances between ensuring affordability and lending.

- Cash status index and liquidity stock index: In 2017, the cash status index (12.93%) and liquidity securities (14.62%) are within the safe threshold compared to qualified banks with its high competition, the balance between ensuring liquidity and profitability.

*b) Regarding the unsafe index group*: As analyzed above, in the context of fierce market competition, to seek and increase profits, that some safety indexes of operations, interest rates, credit, liquidity and etc. are not guaranteed is inevitable. In the period of 2014-2017, liquidity indexes in the warning group should be closely monitored at MB as includes:

- Average lending capacity index is over 60%, in 2017 it reached 63.43%; average lending index on customer deposits is over 80%, in 2017 it reaches 90.43% (the maximum regulated rate is 80%), potential interest rate risks, risks from unexpected needs of customers goods, putting pressure on liquidity;

- Cash and customers' deposits at credit unions on customer deposits are below 5% on average, 8.9% in 2017, and instant payment capability has not been guaranteed;

- Customers' deposit index on average customers' deposit achieved 45%, liquidity demand always stays at a high level because of the large amount of customers' deposits at any time;

- The net status index for credit unions dropped sharply from 465.13% in 2014 to 116.04% in 2017, gradually losing the good liquidity position.

In general, MB Bank has created a balance between raising capital, mobilizing capital and using capital reasonably and flexible in each period, closely following market movements to increase profits and bring more increasing revenue for banks but still ensure some safety ratios in banking operations in accordance with the SB's regulations, some rates exceed safety thresholds but are still under control, closely tracked and monitored.

Capital mobilization has been focused to ensure liquidity supply. The increase of capital is flexibly implemented with many solutions such as increasing charter capital, paying dividends by shares, issuing long-term debt instruments and retaining profits. Specifically for each year, MB's Board of Directors considered market factors and efficiency of MB's capital use to decide solutions, appropriate and optimal time of deployment.

The use of capital (the asset side of the Balance Sheet - including both in-balance sheet and off-balance sheet) is gradually optimized by MB through its portfolio of assets, focusing on assets that consume less capital (assets with their low risk coefficient), high profitable assets in relation to the risk level of the assets. Currently, MB uses the calculation results in accordance with the Circular No. 41/2016 / TT-NHNN of the State Bank to delineate the portfolio of assets with high risks, considering opportunities to reduce risky assets. In the long term, MB uses capital calculation results according to Circular No. 41/2016 / TT-NHNN to allocate capital to business segments on the principle of measuring profitability after risk adjustment. At the same time, business policies will be adjusted to select customers with good financial capacity and transparency. Credit activities are strictly controlled, bad debts are gradually processed. The bank liquidity safety is therefore well established and maintained. Bad debts at the end of 2017 are controlled at 1.20% of total outstanding loans and are 1 of 3 organizations on the market until now, settling debts with VAMC. MB's provision for losses is at VND billion, while total debt of group 3-5 is only at VND billion, showing the utmost caution and safety. It also means that MB will have a chance to re-invest in high provisioning in the financial year 2018.

To achieve the above results, there must be a number of factors, such as:

a) The thinking and will of the leaders and managers of the Military Bank in the awareness and determination to implement the business strategy. This can be understood that MB is not merely a private commercial bank, in which has both political will and socio-economic objectives undertaken;

b) Cultural and traditional elements of the Bank are maintained and promoted from the early days of establishment;

c) The factor formed during the Bank's implementation of development strategies, motivating MB to move forward.

Typically, the development strategy for the period of 2004 - 2008 with breakthrough development and growth, with key business targets increased from 7-10 times, bringing MB into Top 5 Vietnam commercial joint stock banks. Then is the Development Strategy for the period of 2011 - 2015 and a vision to 2020, based on 3 main pillars: "Community Bank, Professional Bank, Transaction Bank", and 2 execution platforms: "Leading risk management, outstanding credit appraisal" and "Fast and customer-oriented implementation culture". The bank's motto of growth is: "Fast, different, sustainable and effective", with 22 solutions, initiatives to implement the strategies, to build MB Bank to become a "convenient bank" for all customers. The implementation of the strategy of 2011 - 2015 has helped MB rise and become firmly in the Top 5 leading commercial banks in Vietnam.

### 2.4.2 Some existing limitations

Based on the above analysis, it can be seen that, besides the achievements in business activities, as well as risk management in general, the risk management activities of MB Bank in the period of 2014-2017 still exist some limitations as follows:

***Firstly***, MB does not have a direct and specialized apparatus on liquidity risk management, so the bank's risk management activities are passive, dependent on the general risk management process, not professional and not highly effective. Although risk management work has gradually approached international standards and is in the direction of modern management, it still needs more time to achieve optimal efficiency.

***Secondly***, in the liquidity risk measurement, the method of using indexes is still the main method, has not comprehensively evaluated on many factors and aspects.

***Thirdly***, tools such as analysis and management of time deviations, situations, centralized risks, effects of undisbursed loan commitments and etc have been implemented, but not yet replicated and flexible in practical applications. Assumptions about liquidity have not been gathered and systematically built, thereby to actively take measures to respond to arising liquidity risk.

***Fourthly***, the data management is still limited, particularly in the data problem to build the model and serve the management information system, provide input to the management and business decisions of the Bank's Board of Directors. Data is not adequate and regularly updated, not collected and managed in a systematic way over a long period, which greatly affects the accuracy of risk management models and tools, accuracy and timeliness of management reports.

***Fifthly***, the service products are monotonous and the quality is not high. Of all MB's revenue, revenue from credit activities accounted for the majority. Most when customers come to the bank, it is not only a transaction on a specific service, such as credit loans or international payment, but also a lot of banking-related activities, but MB has not had a serious concern about this problem yet.

***Sixthly***, in the process of implementing risk management policies, changing the way of managing relationships with customers has encountered some difficulties. Strict requirements on the minimum capital adequacy ratio of Basel II put banks under pressure to optimize the portfolio of assets. This will require MB to change business behavior, such as: selecting customers with good financial capacity and transparency (low-risk factor); strengthening supervision after disbursement; pricing credit in accordance with customer risk level; how to effectively issue and manage the use of credit limits, etc. All of these will affect the relationship between MB and customers. More difficult is that if only some banks apply this standard, instead of borrowing at MB, customers can still choose to borrow from other banks because they do not have to meet many requirements on customer management and supervision.

### 2.4.3 The causes of limitations

There are two main causes of objective causes and subjective causes be presented.

#### *2.4.3.1 Objective causes*

There are six main objective causes:

a) The legal environment for risk management activities in the banking business is inadequate, synchronized and completed. Currently, most commercial banks in the world are applying the Basel Treaty in risk management. This is also a big challenge for banks to reach the standards in banking activities to integrate with the region and the world. Although there are a number of legal documents regulating the prudential ratios for the operation of credit unions with innovation under Basel II, however, until now there is still a lack of specific and applicable guidance documents for implementing risk management based on this standard.

b) Vietnam's financial market is not really developed. The development is not even, especially in the capital market. The weak capital circulation puts pressure on the banking system when it is just burdened with loans to the economy and difficult to mobilize idle capital when necessary.

c) Economic movements in the country still have many uncertainties such as the budget deficit, public debt, bad debt, foreign exchange market, fluctuating gold and interest rates.

d) The pressure of competition among banks is growing, requiring the dynamism, expansion, and development of banks. Banks are faced with pressure both to increase credit activities, mobilize capital and to ensure liquidity capacity. As of 2017, Vietnam has 4 state-owned commercial banks, 3 one-member limited liability banks, 28 JSCBs, 8 100% foreign-owned banks, 2 joint-venture banks, 51 foreign bank branches. In addition, there are People's Credit Funds, Financial Companies, and Finance Leasing and etc. This makes Vietnam market continue to have fierce competition between credit and non-credit unions.

e) The inspection and supervision of the State Bank have many limitations, heavy statistical properties, formality, but has not yet built specific and reasonable criteria of monitoring, evaluation, and classification. Therefore, the inspection and examination results are not deterrent, warning of potential risks.

f) Information system lacks transparency, especially information about customers, which leads to that the verification and assessment of the quality of customers faced many difficulties. In addition, customer sentiment is generally unstable, bringing heavy crowd sentiment, causing liquidity risk to happen at any time. This has continued to be the cause of threatening the liquidity risk of banks. Although Vietnam has a Deposit Insurance Law and an increase in insurance coverage limit to VND 75 million on an account, this has not been able to help customers' psychology improve quickly.

#### *2.4.3.2 Subjective causes*

There are six main subjective causes:

a) MB's chartered capital is still low compared to large banks in Vietnam, and much lower than many banks in the region. This limits the ability to expand business operations, leading to some limitations compared to large banks, such as competitiveness; capital mobilization efficiency; easily affected when there is a fluctuation of the economy or when there is a major policy change from the State to the financial and monetary market. In addition, the size of the charter capital also affects the business operations of the bank due to the regulation on the maximum lending rate compared to the charter capital.

b) MB lacks dynamism in developing new products, the awareness of product diversification is not high and the research of new products and services has not been properly invested. In the process of liquidity risk management, the research and development of new products are very important to support banking liquidity. Some derivative products can help MB in regulating liquidity while still providing banks with income from fees.

c) Compared to large banks, MB's branch network is still small, mainly concentrated in big cities, which also limits a part of the bank's competitiveness on money transfer service, capital mobilization, selling products and services, etc. Expanding the operation network also helps MB go deeper into the population, thereby find solutions to develop and provide utility services, mobilize more capital and enhance the influence of the bank.

d) The internal assessment and customer rating system has been completed and put into widespread use but had many shortcomings and failures to reflect accurately the operation, thus caused marking results not to reflect all enterprises, the non-financial scoring section is still subjective of the assessors. The risk prevention information work on customers has not been updated regularly, the assessment of the enterprise's capacity from which to classify customers and loan classification is sometimes subjective.

e) The quality of human resources is not really adequate and does not meet the requirements and orientation of the bank's development. The human factor is the most profound cause of subjective risks in banking operations, plays an important role in every organization. The majority of the staff is young, in spite of their high enthusiasm, but their capacity is not high, their qualification is limited compared to the international standards. They lack in-depth knowledge and practical experience, especially in risk management. As of December 31, 2017, MB had a total of 8,129 officers and employees with an average age of 29 years. In which, the ages under 25 account for 17.18%, the ages from 25 to 35 account for 68.11%. Foreign language limitations are also a barrier to access to advanced knowledge and management methods in the world.

f) At MB as well as most commercial banks in Vietnam, the inspection, control, and supervision of banking activities are still passive and formal. The quality of inspection and self-inspection activities is weak due to the weak capacity of the inspector; standards, criteria or forms to assess the risk management activities which have not been comprehensive and in-depth. In addition, remedial work after check and inspection has not been strictly implemented and thoroughly overcome.

# 3 SOLUTION TO STRENGTHEN THE MANAGEMENT OF LIQUIDITY RISK IN BUSINESS ACTIVITIES OF MILITARY BANK

Based on the research results in part 1 part 2, part 3 studies two main issues:

a) Analyzing the context and orientation of liquidity risk management for MB bank, in which clarifying the context scenes in Vietnam and internationally, and especially the industrial revolution 4.0. On that basis, the dissertation proposes the orientation of risk management liquidity for MB bank;

b) Providing solutions to enhance liquidity risk management for MB bank in the coming time.

## 3.1 Context and orientation of liquidity risk management

Before going to the orientation of liquidity risk management, the domestic and international context and background of the Industrial Revolution 4.0 will be further described.

### 3.1.1 Domestic and international context

In recent years, Vietnam's economy has made breakthroughs, deeper into the process of international integration when a series of free trade agreements (FTAs) were signed. Vietnam has officially become a member of the World Trade Organization (WTO), the ASEAN Economic Community (AEC) or most recently, the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP). Participation in international organizations is an important milestone marking the domestic market reaching out to the world, including the opening of the financial and banking markets. This is both an opportunity and a great responsibility for Vietnamese commercial banks when they have to compete more fiercely with foreign banks, the risks are constantly increasing as the fluctuations in the international market quickly spreads radiate, impacting on the domestic market.

International practices and experience show that the open and competitive financial and banking system is one of the premises to effectively support economic growth and development. This is also the reason why the trend of international integration of the banking industry has become more and more popular and widespread. In addition to undeniable benefits in access to capital, technology transfer, expert experience, ... the integration trend also brings great opportunities for Vietnamese banks such as:

a) Opportunity to expand and develop markets abroad: Integration of international economy in general and participation in CPTPP, in particular, has opened for domestic banks an opportunity to access markets abroad. Integration creates favorable conditions for domestic credit institutions to expand their operations into foreign markets through the provision of services within the framework of their commitments, especially in the presence of trade and cross-border supply.

b) Opportunity to receive support in consulting, training and fostering new knowledge from foreign banks and financial institutions: International creates opportunities for domestic banks to connect with foreign banks. Link with foreign banks provides domestic banks with good conditions to strengthen the ability to prevent and handle risks through support and technical advice in the application of banking technology and new product management and development skills.

The friction in business activities is also an opportunity for domestic banks to raise themselves to a new level. Opening the banking services market according to bilateral and multilateral commitments will be a good condition to attract direct investment in the financial sector, at the same time, banking technologies and advanced management skills can be absorbed by domestic banks through business cooperation. Participation in management and administration of foreign investors in domestic banks is an important factor to quickly improve the level of business administration in domestic banks.

c) The opportunity to participate in a fair and professional business playing field: When implementing the integration commitments, the State's intervention in business activities of banks will be reduced and protection limited. This context facilitates Vietnamese banks to become more active in their business activities, and banks have the opportunity to show their capabilities and qualifications.

Domestic banks are forced to specialize more rapidly in their operations to quickly access and develop new banking services, improve the efficiency of capital use, exploit and apply more effectively advantages of several types of the bank to expand market share in domestic and international financial markets. International integration requires domestic banks to operate on the market principles, improving competitiveness will promote business efficiency of domestic banks.

In the past period, Vietnam's commercial banking system has developed dramatically with many remarkable achievements but the fact is that the gap between domestic commercial banks and commercial banks in the region and the world is still big in every aspect. In order to maintain the growth rate but still ensure safety, efficiency, sustainability, Vietnam commercial banks need to strengthen risk management, the most urgent issue is to standardize the management system according to international standards. This sets new requirements on risk management in managing business activities of commercial banks in Vietnam, such as:

a) Challenges due to the increasingly fierce competition of the banking system: The opening to integrate, accompanied by a large number of foreign banks with strong financial, technological and management capacity entering the domestic financial market and fierce competition between domestic banks and foreign banks is inevitable.

Foreign banks have advantages in service quality and diversified services so they will attract a large number of customers which are foreign-invested enterprises and a large number of domestic enterprises and individuals. This will lead to an increase in the market share of foreign banks and a decline in the market share of domestic banks.

b) Challenges due to domestic banks facing the trend of increasing foreign ownership ratios in Vietnamese commercial banks: The opening of the domestic market means an increase in foreign ownership ratios at Vietnamese commercial banks. Currently, Vietnamese commercial banks have actively offered shares to shareholders who are large foreign organizations to gradually raise the foreign ownership ratio in commercial banks.

In the group of state-owned joint-stock commercial banks, Vietinbank is the bank with the highest foreign ownership rate, up to more than 28% (at the end of 2014). Among joint-stock commercial banks, foreign ownership generally tends to increase in large and medium-sized banks such as ACB, EIB, TCB, VIB, VPB, about 20-30%. Particularly, ACB has a "reaching-the-ceiling" foreign ownership ratio of 30% in the period of 2012-2014.

c) Challenges due to pressure to improve quality and move high-quality financial and human resources to foreign and regional organizations: In the period of development, the financial sector can attract large amounts of labor involved and is one of the areas with high wages, but in times of crisis and recession, labor in this sector is also the most vulnerable group which is under pressure of dismissal and wage cut.

Even if it is not due to a decline in business trends, there is always a harsh labor movement in the financial sector. It is the reduction of low-skilled labor replaced by highly skilled workers, there is likely the brain drain of highly skilled workers in the competitive process. Therefore, one of the major challenges of the Vietnamese banking system is how to keep talents, avoid the shift of high-quality human resources of Vietnam to regional countries.

International economic integration has contributed significantly to the expansion of the financial services market in general and banking services in particular in Vietnam. Besides the opportunities, integration process in general and integration in banking and finance in particular, there are many risks and challenges, requiring the banking system to constantly innovate, create and improve management capacity to not only stand firm but also assert its position in the region and internationally.

Determining and making good use of opportunities as well as effective response to challenges is a key condition for not only commercial banks, but also the State Bank of Vietnam to actively respond to many possible situations, when pressure from the international economic environment is increasing under the impact of integration, thereby creating the foundation for the sustainable development of Vietnam's banking sector.

### 3.1.2 Background of the Industrial revolution 4.0

The Industrial Revolution 4.0 (IR) is described as the expansion and transition of the 3rd IR when using the combination of hardware, robotics, and large computing capabilities to make information technology and broadcasting, further promote effective application in all sectors, economy, politics, diplomacy ... IR 4.0 is developed on 3 main pillars: digital, biotechnology and physics. The center of this revolution is technological breakthroughs in the field of artificial intelligence (AI - Artificial Intelligence), Internet of Things (IoT ), Robots, 3D printing technology, self-driving cars, Big Data, nanotechnology.

In the field of finance - banking, IR 4.0 is really changing many concepts and ways of doing business, such as distribution channels, traditional banking service products, system administration, and risk management, ... Some applications of science and technology of IR 4.0 in banks include digital banking; big data application; artificial intelligence application (AI) on customer service; cloud application; process automation applications with robots; Fintech financial technology ...

IR 4.0 provides opportunities for governance in general and risk management in particular in the banking sector, such as:

a) The governance model of banks becomes complete thanks to the strong development of artificial intelligence (AI) in IR 4.0. AI is the heart of many major technology companies in the world and gradually becomes perfect, in some ways even more intelligent and accurate than humans. Banks can apply AI in risk portfolio management, customer management, and database management. With the ability to self-learn and adapt, the potential of AI is not limited to applications.

b) IR 4.0 may completely change the distribution channel and traditional banking service products. In the past 10 years, the emergence of smartphones has changed the way people communicate and interact, leading to changes in distribution channels, sales networks and the way banks design products and services. Banking services via Internet, Mobile, social networking, digital banking development, and paperless transactions will be a strong development trend. Customer experience will be an outstanding trend, in some developed countries, even developing countries, more and more "paperless banks" have appeared, thereby improving management efficiency and risk management in the Banking business.

c) For banking activities in general and liquidity in particular, IR 4.0 will provide opportunities for the application of AI management technology and automation in business processes, accelerate the process of direction to the future standard model, including non-cash payment activity (TTKDTM), contributing to improving liquidity.

d) At the same time, progress from IR 4.0 is a stepping stone to help domestic banks develop and compete with advanced banks in the region and the world in terms of catching, adapting and changing promptly for new technology trend. The influence of IR 4.0, namely Internet, cloud computing, Big Data data storage, Internet of Things, will help domestic commercial banks reshape the business, management, electronic payment models, towards building smart digital banks in the future.

Besides, some challenges that banks have to face in the context of IR 4.0 are:

a) Challenges in changing the business model, governance model: Domestic banks must review their business operations, making adjustments to fit the trend of administration trend, smart risk management, mobile banking model, paperless bank, digital bank.

b) Challenges in developing new distribution channels, modern banking products, and services with high integration. In a hyper-connected world with online messages, social networks, multi-touch tablets and a variety of other biotechnology and digitalization, the demand of customers has greatly changed.

c) Challenges in gradually reducing the role of branches. Branches no longer play an important role and will not be the most profitable distribution channel in the future.

d) Challenges due to limitations in financial resources in technology investment, lack of backup data centers: Investment in some technology infrastructure of some banks is still quite limited due to high development and implementation costs. This has a significant impact on the security of information technology in the context of technology development is getting more and more advanced and sophisticated, easily leading to the risk of losing control of the system of banks. The state can support banks by building a public service center to provide backup database infrastructure.

e) Challenges in completing the legal corridor for electronic payment activities. In particular, the legal framework and policy mechanisms related to services, online payment, electronic, modern, virtual money, virtual cards, electronic money ... are new and complex issues which should be further studied, evaluated, revised and supplemented to meet the practical requirements and rapid development of information and telecommunications technology.

f) A common challenge for the whole banking system on information security and national financial network security, high-tech crimes, as well as challenges in qualification, capacity, quantity, and quality of information technology staff. In the field of payment, crime in the field of high technology, card payment via POS, electronic payment, there are recently complicated developments with new and more sophisticated behaviors and tricks.

The IR 4.0 is bringing big changes in the economy and the banking sector with a rapid rate of change, a large scope of influence, a profound impact on governments, businesses and people, bringing both opportunities and challenges. In such a context, to overcome the challenges of change, banks today must quickly innovate, namely: Banks must continue to adapt to changes; Change business culture; Research on brand building and prestige enhancement; Affirm they are important to the position in developing banking services for survival and sustainable development.

In Vietnam, the impact of IR 4.0 achievements on the banking industry can be divided into two phases[37] :

a) The first phase, from 2008-2015, the advent of cloud algorithms, open source software, 3G / 4G mobile data, smartphones, data analysis, and communal networks has encouraged start-up businesses to participate in the financial market, creating opportunities for technology finance (FinTech) to develop.

b) The second phase, from 2016 up to now, the development of artificial intelligence, blockchain, data science, digital identification, and biometrics ... has created an important infrastructure in asset transformation from the use of traditional bank employees to increased use of artificial intelligence, digital identification becomes the basis of basic identification and security through biometric elements such as voice or fingerprints.

By 2020, FinTech's four most affected areas are consumer banks, transfers and payments, asset management and insurance. The results of the "Banking Services, User's Use and Trends in Vietnam" survey of International Data Group (IDG Vietnam) in 2017 show that electronic banking solutions ( e-banking) is becoming more and more popular and highly appreciated for convenience and time saving, with 81% of users using e-banking solutions compared to 21% in 2015.

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[37] News (2018). *Vietnamese banks catch the Industrial Revolution 4.0*. URL: https://baotintuc.vn/thi-truong-tai-chinh/nganh-ngan-hang-viet-nam-don-dau-cong-nghiep-40-20180714140556245.htm (14.07.2018)

According to a survey by the Banking Strategy Institute conducted in May 2017 at 18 Head Offices of commercial banks, 1 social policy bank, 4 100% foreign-owned banks and 2 microfinance institutions (representing 65% of the banking sector's total assets), 92% answered that there are preparations for investment in technological innovation and development of sales channels through digital technology to receive and adapt to the steps oncoming progress of IR 4.0; 76% have prepared to attract workers in the field of high technology and information technology; 96% of banks are currently developing a high technology and technology development strategy of IR 4.0 by 2025, in which 3 banks (VP bank, TP bank, HSBC) have a development strategy about Automatic and advanced robots. This shows that in Vietnam, there is a real revolution on the monitoring, research and application of scientific and technological achievements of IR 4.0 in financial and banking activities.

### 3.1.3 Orientation of liquidity risk management

Orientation for liquidity risk management for MB will be presented after understanding the basis of orientation and business development orientation of its.

#### *3.1.3.1 The basis of orientation*

On August 8, 2018, the Prime Minister issued Decision No. 986 / QD-TTG approving the strategy of developing Vietnam's banking industry up to 2025 and orientations to 2030 with the following objectives:

*(1) Overall objectives*:

a) Modernize the State Bank in the direction of: having a rational organizational model and asynchronous, effective and efficient operation mechanism, in accordance with the socialist-oriented market mechanism, with full legal status and accountability; implementing the prioritized objective of controlling inflation, contributing to macroeconomic stability, promoting sustainable growth; ensuring the safety and health of the system of credit institutions, playing a key role in ensuring financial stability; overseeing payment systems, being the payment and settlement center for payment systems and financial and monetary transaction systems in the economy.

b) Develop the system of credit institutions in the direction of domestic credit institutions play a key role; transparent, competitive, safe and sustainable operation; diverse structures of ownership, scale, type; based on technology foundation, advanced banking management, in accordance with operating standards in accordance with international practice, towards achieving the level of development of the group of four countries leading the ASEAN region by 2025; Be dynamic and creative to adapt to the process of liberalization and globalization; meet the increasing demand for financial and banking services of the economy, towards comprehensive finance by 2030, ensuring that all people and businesses have full and convenient opportunities to access quality financial and banking services, contributing positively to sustainable development.

*(2) Specific objectives*:

a) Gradually increase the independence, activeness, and accountability of the State Bank on the objective of regulating monetary policy, controlling inflation at a level consistent with the socio-economic development orientation in each period, stable support macroeconomic stability, promoting the goal of sustainable economic growth. Gradually reduce the ratio of foreign currency credit / total credit, strive to make the proportion of foreign currency deposits / total payment facilities to be below 7.5% by 2020 and 5% by 2030; proceed to stop lending in foreign currency at the latest by 2030 to basically overcome the dollarization in the economy.

b) Strengthen institutional capacity, effectiveness and efficiency of banking inspection and supervision by the State Bank; expand the scope of inspection and supervision to financial groups in the form of parent-subsidiary companies, in which the parent company is a credit institution; By the end of 2025, banking inspection and supervision complies with the majority of effective banking supervision principles according to Basel.

c) Promote the development of non-cash payment, optimize ATM network and POS. By the end of 2020, the proportion of cash on total payment means is below 10%; By the end of 2025, the proportion of cash out of total payment means is below 8%.

d) Increase the number of enterprises and people accessing financial and banking services provided by credit institutions. Focus on developing appropriate types of services to serve groups of people who have not had or have little access to traditional banking services in rural and remote areas, areas with difficult socio-economic conditions.

e) Develop the system of credit institutions in accordance with the socio-economic conditions and the status of the system through each stage.

f) Increase the efficiency of allocating credit capital to meet the requirements of socio-economic development; promote the development of "green credit" and "green banks" to contribute to the transformation of the economy towards green growth, low carbon emissions, adaptation to climate change; increase the proportion of bank credit invested in renewable energy, clean energy, low carbon production and consumption sectors. Integrate the contents of sustainable development, climate change and green growth in credit loan programs and projects.

g) Gradually improve the position of Vietnam in international forums and organizations on banking currency, serving the development of the banking industry, in line with international integration requirements.

### *3.1.3.2* Military Bank's business development orientation

Business development orientation of MB in the period to 2020 and vision to 2030 focuses on:

a) Orienting the vision of "Being the most convenient bank" with the goal to 2021 will be in the Top 5 of Vietnam banking system on business efficiency;

b) Focusing on developing business activities under the motto "Innovation, Cooperation, Modernization, and Sustainable Development" based on 3 pillars "Community Bank, Professional Banking by Industry, Digital Bank ”and 2 platforms“ Outstanding risk management, fast execution capacity ”. The focus on 04 key shifting is digital bank transfer, customer relationship enhancement, outstanding QTRR, improving member company performance. Implementing synchronization of 4 solutions: Executive Management, Business, Technology, Human Resources.

c) Continuing to expand business operations safely and sustainably;

d) Taking advantage of opportunities to cooperate with Fintech, M&A trends to increase scale (if appropriate and effective), continuing to focus on ensuring harmonization of shareholders/investors' benefits through flexible policies in accordance with regulations and practices;

e) Continuing to develop and apply modern banking technology through which to deploy and expand the provision of modern and convenient banking services to all types of businesses and people in economic centers and urban areas;

f) Maintaining and improving profitability in business through the diversification of banking services, enhancing the focus on business safety, reducing operating costs through reorganizing and reorganizing network of branches and transaction offices;

The focus on 04 key shifting is digital bank transfer, customer relationship enhancement, outstanding QTRR, improving member company performance. Implement synchronization of 4 solutions: Executive Management, Business, Technology, Human Resources.

#### *3.1.3.3 Orientation for liquidity risk management for Military Bank*

To improve the competitiveness of banks, the first thing to do is maintaining stability in operations, to do that, the role of liquidity management should be placed in the first position. Because this is a very fast and strong factor affecting the reputation of the bank. Recognizing the importance of risk management for sustainable safety in the banking business, MB has determined specific orientations as follows:

***First***, develop a risk management strategy based on comprehensive and thorough assessments of the business situation, expected profits of shareholders and the domestic economic situation; determine the general level of risk tolerance and the degree of acceptance of each type of risk separately. The BOD is the ultimately responsible body in approving the risk management strategy;

***Second***, maintain appropriate liquidity management strategies, combine asset-based reserves and external borrowing to meet liquidity needs when needed;

***Third***, research and develop a strategy on liquidity risk management including acceptable risk levels and set the following qualitative and quantitative targets:

a) The composition of assets and liabilities is based on relative liquidity and consumption. Since the overall strategy of the bank mainly focuses on short-term and medium-term activities, liquidity management strategy also needs to reflect this characteristic;

b) The use and dependence on certain financial instruments. As the liquidity assets account for a large proportion of the bank's asset structure, there is currently no need to consider financial tools but in the future, this needs more consideration;

c) Maintain liquidity in many currencies. Confirm the foreign currencies in which banks have a lot of transactions and the need to control the liquidity of each currency.

***Fourth***, continue to develop and improve the risk management process in general; promote the effectiveness of the comprehensive risk management system, aiming at an international risk management process with a view to safe and sustainable development. In particular, special attention is paid to the risk management activities, which is considered a significant factor for the bank's sustainable safety in business;

***Fifth***, research and build a separate and independent liquidity risk management apparatus to monitor and manage liquidity, thereby improving the effectiveness of liquidity risk management activities;

***Sixth***, perfect the internal information system, step by step update the operational information to serve as a basis for accurate management decisions based on practical and scientific grounds; Speed up the progress of applying information technology, continue to invest in upgrading technology infrastructure, increase management efficiency in the system;

***Seventh***, build and improve the measurement method, the system of internal tools to assess liquidity risk, as well as to help test the tolerance of liquidity risk of the bank periodically; Enhance the ability to warn early risks in general, especially liquidity risk.

***Eighth***, complete the internal monitoring and control work through the assessment of risk measures, the level of compliance with risk processes, regulations, and limits. This work is required to be carried out regularly by the Liquidity risk department and the internal audit department.

## 3.2 Solutions to enhance liquidity risk management

There are two main groups of solutions to prevent liquidity risks and improve liquidity risk management capacity.

### 3.2.1 Group of solutions to prevent liquidity risks

There are three main factors are mentioned.

#### *3.2.1.1 Increasing equity to increase financial capacity and prestige*

Own capital is a source that can be used flexibly and banks have a high degree of autonomy when using this capital. Self-financing can be used to offset the temporary payment gap, to prevent operational risks ... Improved equity capital will be a favorable condition for banks to improve liquidity management capacity: when a bank has a larger amount of capital, its financial capacity will be enhanced, the amount can be used to meet the demand of liquidity when there is a sudden need for capital withdrawal that managers cannot anticipate. Currently, the financial capacity of most commercial banks in Vietnam, including MB is quite low compared to other state-owned commercial banks and regional banks, such as China, Malaysia, India, Thailand, and Indonesia.

The low level of equity capital will also affect the bank's ability to grow its total assets, especially the ability to expand the scale of credit operations and adversely affect the bank's safety factor. As analyzed in Chapter 2, the minimum capital adequacy ratio of MB is relatively high compared to CAR of the entire system of Vietnamese credit institutions by the end of 2017, but in practice, the data on the system CARs of Vietnamese commercial banks in general, in which MB has generally not high reliability because the statistics on bad debt are not converted correctly. If taking into account the bad debts, the CAR of Vietnamese commercial banks, including MB will be much reduced, failing to meet the minimum capital adequacy ratio compared to the standard set in Basel II. III.

Therefore, in the coming years, MB needs to increase its financial capacity, first of all, to increase its own capital because this is a buffer when the bank is at risk of declining the value of the assets. Some main solutions such are to strengthen the issuance of shares on the stock market, strengthen mergers and acquisitions activities, strengthen joint ventures, actively increase the appropriation of funds, strengthen retained profits again to supplement working capital.

#### *3.2.1.2 Diversify capital mobilization and capital use operations*

The focus on capital will be the cause of liquidity risk for banks. In recent years, commercial banks have gradually expanded forms of capital mobilization, time to mobilize capital actively and flexible. However, what makes customers come to deposit money into banks or become creditors of commercial banks by buying debt certificates issued by banks is not only the interest they receive but also those other aspects such as the prestige of banks and utilities when they make transactions with the banks.

***(1) Regarding mobilization operations, MB needs to focus on solutions, such as:***

a) Strictly manage customers with large mobilized capital and high credit balance as this is a very important task in liquidity risk management. Mobilized capital comes from many different sources, possibly from people or businesses. This is an important source of capital for each bank, but it can be volatile and completely subjective to environmental changes. The problem is that banks need to establish relationships with key customers with high mobilized money in order to control and forecast the change of this capital source;

b) Diversify the TSN portfolio, thereby expanding the scope of access to capital from various sources through: diversification of mobilization terms (term of 1, 2, 3 weeks; term of 1, 2 months or long term 5, 10 years); diversification of deposits in deposits (USD, EUR, AUD ...) and diversification of mobilization methods (mobilizing via deposits, savings, issuing bills, bonds, mobilizing at fixed locations and home…). Thereby facilitating depositors in choosing the form and method of depositing money;

c) Effectively build strategic customer relationship by maintaining good relationships with customers, especially with big depositors, partners, correspondent banks;

d) Continue to develop retail banking services to enhance capital mobilization with low cost but high efficiency. MB needs to maintain and enhance coordination with other service providers such as electricity, domestic water, aviation services, telephone services. Coordinating to pay for these services can help MB maintain a large customer base with high demand deposit account balances and low mobilization costs. Moreover, this will create the cohesion of the current customer volume with the bank.

***(2) Regarding capital use operations, MB needs to focus on solutions, such as:***

a) Improving the quality of credit through strengthening internal inspection and control stages and improving the quality of appraisal. Credit is an activity that creates a huge liquidity demand, and at the same time, when credit quality is low, it will increase liquidity risk;

b) Develop the discount of negotiable instruments and valuable documents: this is an indirect credit operation, with low risk and does not "freeze" capital, with a short-term loan, thus improving liquidity in TSC operations;

c) In addition to the form of securities investment that has been specialized for private securities companies such as MBS, MB needs to continue to expand operations such as advising, preserving securities, promoting cooperation with real estate companies, large economic corporations and groups to exploit collateral and pledge.

#### *3.2.1.3 Some other solutions to prevent liquidity risk*

a) Diversify liquidity risk prevention tools. Liquidity reserve assets of Vietnamese commercial banks are generally quite monotonous like SBV bills and State Treasury bills. The diversification of secondary liquidity reserve tools will help increase the bank's flexibility in selling assets to meet liquidity requirements, and further increase the profitability of its liquidity assets. Assets that can be included in the bank's secondary liquidity reserve list including valuable papers issued by other credit institutions on the market that are capable of discounting, Government bonds, local bonds. However, Vietnam's financial market is not really developed yet, financial instruments in the market are relatively poor, transactions are at small-scale, leading to high transaction costs, also making diversification of financial instruments for liquidity provision of commercial banks difficult and costly. On August 10th 2017, the first trading session of Vietnam derivatives market took place, which is the first step to help investors in general including commercial banks have the opportunity to diversify public tools to ensure both business safety and liquidity capacity at a reasonable cost.

b) Improve bank management capacity in terms of economic integration and IR 4.0. That the bank does not have an effective governance structure inevitably entails bad and hidden business risks;

c) Promote activities of derivatives market such as forward transactions, currency swaps, option contracts, etc. These are the most effective selection tools in risk prevention;

d) Continue to strengthen the reputation and promote banking image through brand building associated with prestigious and quality products and services. In order to do this, MB needs to strengthen research on capital capacity in the population in the area, select customers with strategies, tastes of customers, utility in their products and services ... The right research is also the basis for determining the mobilization and use of potential capital of customers in liquidity management;

e) Enhance the effectiveness of internal control, this is a very important activity of the bank to ensure compliance with the regulations of all banking operations. In particular, the bank needs to periodically assess the ability to withstand its liquidity risk shock. Internal control results need to be reported to the Executive Board, which suggests necessary measures to establish the necessary “buffer layers” to ensure liquidity safety in any situation. Although there are many documents regulating the activities and tasks of this work, its role has not been properly evaluated. Completing the function and enhancing the effectiveness of this work is a process that requires MBs to strengthen staff with good and experienced qualifications, and at the same time build processes and control measures according to international practice;

f) Development of debt trading operations: This is a form of changing the subject of lenders in credit relations. In which the first borrower gives his right to another on the agreement of a reasonable price between the two parties. This operation is a very useful solution in reducing credit risk and liquidity risk of banks, it increases the liquidity capacity for banks when capital flows are circulated according to plan without being yanked by causes of not being able to repay customers' debts;

g) Develop and complete reasonable policies for depositors who withdraw money before maturity. Currently, the increasingly fierce competition not only between domestic banks and foreign bank branches but also between domestic banks forces the banks must implement relatively easy solutions with customers who withdraw money before maturity such as still paying interests to customers withdrawing money before maturity, with a demand interest rate. If many customers withdraw money before maturity at the same time, a lot of liquidity risk may occur as the bank's liquidity reserve has just been at the calculated level for the payment due. However, this is not only a solution that is applied separately to each bank but also needs to be applied to the banking system.

### 3.2.2 Group of solutions to improve liquidity risk management capacity

There are three main factors are mentioned.

#### *3.2.2.1 Complete the organizational model of liquidity management apparatus*

In order to improve liquidity management capacity, MB needs to continue to maintain, strengthen and develop the liquidity control model in 3 security rings in the following directions:

***Round 1***: Branches are the places where business and risk is directly born, this will be the first round of control over the management and implementation of business plans, capital balance, and capital use.

***Round 2***: The ALCO department coordinates with the Risk Management Department to develop the system, regulations, processes, and guidelines for liquidity management; develop and propose to set limits, monitor, and control the liquidity performance of units in the first round and make independent statements on liquidity situation to the Board of Management.

***Round 3***: The internal audit department is responsible for periodical or extraordinary inspection and supervision of the full and effective implementation of liquidity management in the two above rounds.

#### *3.2.2.2 Develop framework, Perfect policies and methods of risk management*

a) Develop and promulgate a set of risk management manuals and internal control manuals in accordance with the bank's characteristics. Currently, MB is implementing a comprehensive risk management model. The application of this model in practice will help banks to control liquidity risk in a comprehensive way in the overall business operations of the bank and therefore the liquidity management of the bank will be more active. However, in order to promote the impact of this risk management model, it is necessary to improve the qualifications and capacity of the bank's management staff and employees, due to the fact that no matter how perfect the management processes are, they are operated by the staff.

b) Complete the liquidity management policy and liquidity risk management to suit each type of risk in the bank. MB needs to formally build a document specifying issues such as departments and individuals responsible for liquidity management decisions; establishing a comprehensive liquidity risk measurement system and accessing the impact of market fluctuations on all business activities and liquidity status of the bank; setting out the market risk management limits, liquidity risk that banks must comply with in order to minimize losses to banks when there are adverse market fluctuations in interest rates, exchange rates, and supply and demand of capital; making and using risk statements. In particular, special attention must be paid to improving the quality of credit risk management and operational risks. These are the types of risks that have the most profound impact on the level of liquidity risk in MB over the years.

c) Apply the combination of static liquidity analysis method (using the ratio of liquidity assets required ratio) and dynamic liquidity analysis method (method of assessing the liquidity status of the bank) to help warn banks from capital structure and ability to handle liquidity issues from short to long term; reorganize the risk management model, ensuring that the liquidity management department is always provided with timely and accurate information; provide a better mean of assessing the bank's current and future liquidity status.

#### *3.2.2.3 Some other solutions to improve liquidity risk management capability*

There are two main solutions should be concerned.

a) Research applications, develop cash flow models to manage liquidity. This is a modern and highly effective liquidity management model, which helps the bank to determine liquidity capability over time, thereby bank managers can offer solutions to limit the level of risk when having shortages and investing when excessing liquidity;

b) Further, strengthen the restructuring of liabilities and assets accordingly by considering restructuring the liabilities and assets portfolio to minimize risks at the lowest level. That is: restructuring capital mobilized for lending in the market 1; restructuring short-term loans with medium and long-term loans; implementing the issuance of valuable papers; adjusting capital mobilization structure between market 1 and market 2; adjusting lending structure insensitive and risky areas such as securities, real estate, etc.

### 3.2.3 Other support groups

There are four main support groups should be concerned.

a) Strengthen the forecasting of macroeconomic conditions in order to limit negative impacts on the bank's operations through building a system of forecasting indicators as well as specialized service departments collecting and forecasting macroeconomic conditions.

The fact that the banking industry has proven, when the economy is in decline, banks tend to stock up on liquidity assets. In contrast, when the economy grew strongly, liquidity reserve assets were reduced;

b) Improve the quality of human resources for liquidity management, focus on training and retraining staff, especially in-depth officials in management, exploitation, and use of resources. All commercial banks have been aware of the problem of human resource quality and have had satisfactory solutions to gradually improve the quality of human resources in general, especially human resources in management. However, the capacity and qualifications of the banking staff in general, especially the risk management staff at most commercial banks in Vietnam are still quite inadequate, unable to meet requirements set, placed in the context of large international integration in the banking sector. Most officials can only do the right process, but in risk management, especially risk management, it is necessary for the officers with good forecasting ability, so they must have a wide understanding and strong business ability to synthesize and understand calculation techniques and forecasting models. This is still quite modest in the majority of bank officials in Vietnam today, including MB;

c) Apply more information technology systems in the context of the Industrial Revolution 4.0. The banking business is a basically high-level business based on technology infrastructure with frequent and continuous updating requirements. In the context that the legal foundation in the financial and banking sector in Vietnam is still inadequate, the trend of unfair competition is very complicated, difficult to control, so that to be able to win in competition requires banks find measures to expand supply services, thereby expanding customers and expanding markets. In order to do that, it is imperative that commercial banks including MB have to upgrade modern technical infrastructure to quickly deploy new and highly competitive types of services.

d) Innovate the accounting information so that the accounting work figures accurately reflect the bank's operation situation. The inadequacy in accounting work is one of the factors that cause the limitations of operating in general and liquidity management in particular. Accounting work needs comprehensive innovation, from management information systems, voucher systems, accounts, accounting reports and etc. Synchronization in the implementation of this work will lead to update and accuracy and smoothness of information. Accurate and updated information is a factor that plays a huge role in affecting liquidity management capacity of commercial banks in general and of MB in particular.

## 3.3 Recommendations

The recommendations are needed for the Government and for the State Bank.

### 3.3.1 Recommendations for Government

There are four main problems to recommend.

#### *3.3.1.1 Emphasis on macroeconomic stability*

The fluctuations of macroeconomics have significantly affected the business activities of the bank and are one of the causes of liquidity risk for commercial banks. In the context of the unstable macroeconomic environment, the government's policy of economic management is unstable, the activities of all economic organizations contain risk factors that directly affect the liquidity of commercial banks. Therefore, to improve the efficiency of liquidity management in the bank system, it is recommended that the Government continue to ensure economic stability. Namely:

a) Enhance the ability to forecast fluctuations in the world economy in parallel with changing the growth model, economic development towards sustainability. The model of economic growth should focus on growth in depth rather than width. Accordingly, it is necessary to determine reasonable economic growth taking into account changes in the environment, climate and politics, especially in the context of complicated relations with China.

b) Control and remedy quickly and promptly potential factors that may cause macroeconomic instability, stabilize prices, etc.

c) Monitor and strictly manage the balance of overall payment, balance money - goods, control and limit trade deficit and budget deficit.

#### *3.3.1.2 Complete the legal framework for the banking industry*

The legal framework is always an important factor affecting operations in general and liquidity management in particular of commercial banks. In recent years, the system of legal documents relating to the banking system has basically been improved but there are still certain shortcomings and a distance far from international practices. The feasibility of a large number of legal documents is weak because the issuance of these documents has not really followed the business practices, and also due to the inspection and control of the implementation have not been properly focused. Moreover, there is a lack of coordination between commercial banks and law enforcement agencies, leading to commercial banks' unprotected interests and high legal risk factors. Therefore, the Government needs to ensure the completion of a system of legal documents while enhancing its feasibility, ensuring a healthy business environment.

#### *3.3.1.3 Prioritize financial market development, especially capital market*

The development of the capital market helps the capital in the economy to be effectively allocated, while reducing the load for the banking system and helping it to access the liquidity from other channels besides just depending on the interbank channel. In addition, the developed stock market will contribute to increasing the capitalization of the bank, helping the bank increase its own capital to meet the needs of expansion and development in the future.

In terms of some recommendations for the capital market, the Government should continue to strengthen and develop the capital market, gradually improve its structure and operating mode, develop more capital supply channels for the market, diversify and enhance the quality of services, facilitating to attract more investors, especially institutional investors. In which, it is necessary to orient and prioritize the development of debt and asset trading market, improve the operation of debt and asset trading companies.

#### *3.3.1.4 Other recommendations for the Government*

a) Balance budget revenue and expenditure activities at a reasonable level to ensure the source of public debt safety, limiting the continuous budget deficit. The long-term overspending will lead to inflation, causing macroeconomic instability. Specifically, for the economy of our country today, the revenue source is tending to decrease due to a decline in crude oil prices, reduced taxes due to economic integration and that aggregate demand has not really recovered; The budget spent on significant activities in the future such as development, science - technology is reduced while the total recurrent expenditure is not reduced. This shows that discipline is not good in using the budget;

b) Improve the quality and efficiency of public investment by urgently issuing a policy framework for public investment in Vietnam today after the Public Investment Law 2014 came into practice on January 1, 2015; continue to improve relevant laws such as planning law, issues of using state budget, allocating investment capital; review investment plans, considering the actual situation and the initial capital allocation plan, due to the fact that many projects cannot keep up with the slow and low disbursement; have a mechanism to closely monitor and supervise investment plans, consider key investments in areas such as education, science and technology, avoiding the scattering investment; carefully calculate socio-economic effects brought about by public investment to make the right investment decision;

c) Support to increase charter capital for Vietnamese commercial banks to strengthen financial capacity;

d) Complete policies on appropriate salary mechanism to ensure attracting highly qualified human resources to work in Vietnamese commercial banks;

e) Prioritize the reform of the banking system, including the State Bank and commercial banks, accelerating the process of equitization of SOCBs (State-owned Commercial Banks) in order to enhance financial capacity, strengthen governance and administration of the current SOCBs;

f) Encourage the operation of an Independent Auditing Company, in order to create a financially transparent environment;

g) Regularly review legal documents, regulations, and guidelines related to the operation of commercial banks to grasp difficulties when applying them, have timely amendments and facilitate commercial banks to operate more effectively in risk management contributing to the sustainable development of the economy.

### 3.3.2 Recommendations for the State Bank

There are six main problems to recommend.

#### *3.3.2.1 Implementing a flexible and sufficient monetary policy*

The State Bank should study and perfect the instruments of monetary policy in the direction of:

a) Follow market principles to achieve the goal of monetary stability, limit inflation, promote economic growth in an effective and sustainable manner, avoiding the implementation of objectives through administrative measures;

b) Carefully consider the amount and frequency of application, it is necessary to consider the duality of these tools;

c) Complete and use open market operations as a key tool in regulating the SBV's cash flows in the direction of increasing the number of transactions, expanding various types of valuable papers to be traded, diversifying transaction term and volume. Currently, only valuable papers issued by the Government and the State Treasury can be implemented OMO, while the number of securities and valuable papers held by credit institutions is very diverse. With these valuable papers, the SBV can allow higher discount rates when bidding;

d) Continue to expand the deposit subject to compute required reserves, in the direction of allowing credit institutions to carry out a required reserve with valuable papers instead of the deposits at the State Bank currently to reduce costs for commercial banks and at the same time promote open market operations;

e) Consider the regulation of required reserve ratio from time to time in the year, recognize the issue of required reserve preservation in many aspects. This is a tool to ensure safety in operation and ensure efficiency in the use of capital resources throughout the system, avoiding the current situation that some banks still have to maintain the balance of deposits of up to several thousand VND billion at the SBV while the demand for daily liquidity is only 1/3 or 1/5 of that number;

#### *3.3.2.2 Strengthen banking inspection and supervision activities*

In addition to the system of legal documents on inspection and supervision to the banking activities in general and the liquidity inspection and supervision, in particular, has been implemented, the inspection activities should have fundamental improvements in the following direction:

a) Strengthen remote monitoring and macro monitoring for the commercial banking system, especially the activities of these institutions in the monetary market to monitor market trends, thereby timely discovering risks. The experience of developed countries after the

2007-2009 crisis like the US shows that macro-security monitoring plays a very important role;

b) Build an early warning center based on human resources of units such as banking supervision and inspection agencies, insurance bureaus and the State Securities Commission to contribute to preventing and promptly handling events which may adversely affect the banking system;

c) Strengthen the operation of the Credit Information Center (CIC) and Deposit Insurance. This system will help monitor the commercial activities of commercial banks directly, thereby giving early warning to commercial banks.

#### *3.3.2.3 Maintaining and promoting the development of derivative market*

Derivative financial instruments such as forward transactions, currency swaps, option contracts, etc. are the most effective options for preventing risks. In which:

a) REPO market is an effective tool in creating high liquidity for debt securities and asset structure to support liquidity for commercial banks quickly;

b) Forward or Future contracts are also tools to "lock" the interest rate to limit risks when market interest rates fluctuate complicatedly;

c) Swapping is an important tool for commercial banks to restructure their liabilities effectively.

However, in Vietnam, these financial instruments are in the process of formation and underdevelopment. As a monetary policy executive, the State Bank should have legal documents and guidelines to bring this market into operation and develop quickly to help commercial banks to participate in risk prevention for them and contribute to promoting the development of these tools through providing services on these tools to customers.

#### *3.3.2.4 Consolidate a synchronous legal corridor for banking activities*

The consolidation of completed legal foundations is extremely important in good liquidity risk management, demonstrating the role and responsibility of the State Bank. Currently, the system of legal documents in Vietnam does not have specific regulations on liquidity risk management in the banking system; regulations on rights, obligations, and responsibilities of the Executive Board in the bank. Circular No. 36/2014 / TT-NHNN of the SB only mentioned short-term liquidity management of banks. In the coming time, the State Bank should focus on:

a) In addition to the basic conditions of the legal environment for implementing Basel II, it is necessary to continue to improve the legal framework for the issue of ensuring the operational safety of the banking system according to international standards , strengthen the financial capacity of commercial banks; implement Basel II application roadmap at banks along with the restructuring of the banking system;

b) Guidance on the balance between level 1 and level 2 reserves, between benefits and costs in the short term and future;

c) Require commercial banks to build a longer-term liquidity forecast, which can be 1, 3, 9 months and even over 12 months on the basis of diversifying types of assets to serve the purpose of liquidity;

d) Supplement the system of indicators of liquidity measurement of commercial banks as well as standards for this indicator system and require to analyze mandatory liquidity risk simulation scenarios at commercial banks;

e) Mandatory requirements and guidance for commercial banks to implement periodic reports on assessment and simulation of liquidity risk situations at different times in the future (maybe in 1 or 7 next working days, etc.).

#### *3.3.2.5 Make transparency on the whole system information*

In the banking business, there have been many non-transparent appearances causing serious impacts such as:

a) Rumor after the SB announced the basic interest rate to 8%, some banks pushed deposit rates up to 11-11.5%. Overnight rates among banks sometimes push up to 30%;

b) The rumor that the SB has continuously pumped tens of thousands of billions of dong for banks in the past few days to solve the banking liquidity situation.

But the above groundless rumors have created instability causing confusion in the banking system, causing certain worries for the SB in management. Therefore, commercial banks need to make information transparent to create interrelations sustainable end, actively coordinated to deal with any unexpected situations. Specifically, commercial banks need to publish monthly and quarterly and annual reports on the results of bank risk management, including liquidity indicators (deposit growth, outstanding loans / customer deposits, customer deposits / total liabilities and etc.), bad debt ratio, minimum capital adequacy ratio, capital mobilization situation and explain the fluctuations occurring (if any).

#### *3.3.2.6 Some other recommendations with the State Bank*

a) Complete the interest rate policy in the direction of: focusing on upgrading and developing the monetary market, soon overcoming problems such as deposit interest rate regulation of commercial banks, regulating the limited participation of this commercial bank into the undeveloped market, interest rates have not yet reflected the supply and demand relationship; enhancing the effectiveness of the interest rate liberalization regime, although at present the basic interest rate is the reference interest rate of commercial banks, in some periods with interest rate base, this has affected the efficiency of interest rate mechanism and competition between commercial banks; avoiding adjustments in interest rates by administrative orders and should allow the market to operate in accordance with supply and demand and interest rates to reflect the exact supply and demand in the monetary market;

b) Develop policies and control procedures, measure risks gradually towards international standards for liquidity safety, especially standards related to risk management in Basel II treaty and Basel III. Since then, the liquidity situation of the whole system will be recognized properly;

c) Research and issue the new Law on Credit Institutions in accordance with the current context in the direction of improving regulations and disciplines of the banking market.

d) Finally, study, amend and supplement regulatio ns on non-cash payment, including regulations on new facilities and services, payment intermediary services, electronic money, and e-commerce activities; issuing regulations on the responsibilities of service providers, service users, and third parties.

# CONCLUSION

Commercial banks are an intermediary financial institution, therefore, with the collapse of any bank, they can spread quickly and lead to the collapse of other commercial banks. Vietnam's commercial banking system has contributed significantly to the socio-economic development of the country. However, for sustainable development and continued capital supply to meet the requirements of economic growth, liquidity and liquidity risk issues of banks needed to be more important. Along with the development of the banking system, the theory of liquidity risk management has also developed constantly and supplemented to suit reality. A reasonable liquidity management policy will make an important contribution to help bank managers to operate the bank's operations firmly in front of difficulties and to achieve greater success.

On the basis of synthesizing research methods, applying theory, the Thesis with the topic of liquidity risk management in business activities at Military Commercial Joint Stock Bank focusing on addressing the theoretical and practical issues related to liquidity risk management with MB is the main subject to analyze, specifically: the thesis has analyzed the basic issues of liquidity risk in business operations and liquidity risk management of commercial banks; assessed liquidity situation in MB based on analyzing the risk management situation through common metrology criteria; assessed the liquidity situation, the Thesis mentioned the major orientations in business activities with the viewpoint of liquidity risk management at MB, thereby recommending the system of solutions and recommendations for strengthening the risk management strategy at MB during next time.

Business activities of commercial banks always have many potential risks, in which liquidity risk is a type of risk which is permanent because it is influenced by many subjective and objective factors, therefore, risk management is always a problem set in every stage of development of commercial banks.

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[11] Liabilities are the result of raising capital from banks from economic organizations and all strata of society. ....................................................21

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| ACB | Asia Joint Stock Commercial Bank |
| AEC | ASEAN Economic Community |
| AI | Artificial Intelligence |
| ALCO | Asset-liability Committee |
| APQO | Asia-Pacific Quality Organization |
| ATM | Automated Teller Machine |
| BIDV | Bank for Investment and Development of Vietnam |
| CAMELS | (C)apital adequacy, (A)ssets, (M)anagement Capability, (E)arnings, (L)iquidity, (S)ensitivity |
| CAR | Capital Adequacy Ratio |
| CBs | Commercial Banks |
| CPM | Corporate Performance Management |
| CPTPP | Comprehensive and Progressive Trans-Pacific Partnership |
| CTG | Vietinbank |
| EAD | Exposure at Default |
| EIB | Eximbank |
| EVE | Economic Value of Equity |
| FTA | Free Trade Agreements |
| IDG | International Data Group |
| IMF | International Monetary Fund |
| IoT | Internet of Things |
| IR 4.0 | Industrial Revolution 4.0 |
| KRI | Key Risk Indicator |
| LGD | Loss Given Default |
| MB | Military Commercial Joint Stock Bank |

| | |
|---|---|
| NII | Net Interest Income |
| NIM | Net Interest Margin |
| NLP | Net Liquidity Position |
| NPL | Non Performing Loan |
| PD | The Probability of Default |
| POS | Point of Sale |
| RCSA | Risk Control Self Assessment |
| ROAA | Return on Average Assets |
| ROEA | Return on Average Equity |
| SBV | State Bank of Vietnam |
| SOCBs | State-Owned Commercial Banks |
| STB | Sacombank |
| TCB | Techcombank |
| TTKDTM | Non-cash Payment Activity |
| VaR | Value at Risk |
| VCB | Vietcombank |
| WTO | World Trade Organization |

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